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C. N. JOHNSON, M. A., L.D.S., D.D.S.

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CONTRIBUTORS TO PRACTICAL HINTS.

Almon, Homer

Baird, D., Uxbridge, Can.
 Banzhaf, H. L., Milwaukee, Wis.
 Bellchamber, C. E., Effingham, Ill.
 Black, A. D., Chicago, Ill.
 Brophy, T. W., Chicago, Ill.
 Buckley, J. P., Chicago, Ill.
 Buscho, W. A., Chicago, Ill.

Campbell, B. C., Lake Geneva, Wis.
 Cheeseman, F. E., Chicago, Ill.
 Conkey, F. M., Homer, Ill.
 Conzett, J. V., Dubuque, Iowa

Davis, L. L., Chicago, Ill.

Fernandez, E. M. S., Chicago, Ill.
 Ford, L. E., Los Angeles, Cal.

Gale, J. W., Cologne, Germany
 Gilmer, T. L., Chicago, Ill.
 Good, Robt., Chicago, Ill.
 Goslee, H. J., Chicago, Ill.
 Gowan, W. C., Creemore, Can.
 Graham, F. A., Harbor Springs, Mich.
 Grisamore, T. L., Chicago, Ill.

Hadley, C. J., Chicago, Ill.
 Hannaford, M. L., Rockford, Ill.
 Haskell, L. P., Chicago, Ill.
 Hemphill, W. J., Dexter, Iowa
 Henderson, G. H., Springfield, Ill.
 Hershey, G. S., Michigan City, Ind.
 Heustis, W. C., Minneapolis, Minn.

Jenkins, N. S., Dresden, Germany

Kelsey, W., Marseilles, France
 Kreamer, C. W., Alliance, Neb.
 Kuhl, G. E., Saline, Mich.

Martin, Oliver, Ottawa, Canada.
 MaWhinney, Elgin, Chicago, Ill.
 McAbery, E. G., Chicago, Ill.
 McElhinney, M. G., Ottawa, Can.
 Mitchell, Wm., London, England
 Moffat, J. C. W., Houston, Miss.
 Munroe, Grafton, Springfield, Ill.

Newkirk, Garrett, Pasadena, Cal.

Prothero, J. H., Chicago, Ill.

Reaben, W. H., McComb, Miss.
 Roach, F. E., Chicago, Ill.
 Rohland, C. B., Alton, Ill.
 Royce, E. A., Chicago, Ill.
 Ruggles, F. J., Nevada, Iowa

Schaffner, H. L., Florence, Italy
 Sparks, R. E., Kingston, Can.
 Stephan, F. W., Chicago, Ill.
 Stewart, R. W., Danville, Ill.

Taggart, W. H., Chicago, Ill.

Von Unruh, V., New York, N. Y.

Waas, A. M., Philadelphia, Pa.
 Wassall, J. W., Chicago, Ill.
 Wright, C. M., Cincinnati, Ohio

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Baldwin, C. M.	Chicago, Ill.
Banzhaf, H. L.	Milwaukee, Wis.
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Weiss, O. A.	Minneapolis, Minn.
Wright, C. M.	Cincinnati, Ohio.
Wyndham, Horace	London, England.
Younger, W. J.	Paris, France.

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No. 1

REPORT ON OPERATIVE DENTISTRY, FOURTH INTERNATIONAL DENTAL CONGRESS.*

St. Louis, Mo., August 29 to September 3, 1904.

BY C. N. THOMPSON, D. D. S., CHICAGO, ILL.

The intention of the writer in presenting this paper is to expose the new things for inspection and discussion, because new things are only partially tried and stand unproven and therefore can not be accepted until time and trial shall have given them a stamp of approval.

The newest points of interest observed were not, as a rule, definite departures, but mostly along the line of improved details and the newness of the points presented will depend somewhat upon who is in this room, because many in attendance here undoubtedly saw all the writer did and possibly more.

The first thing that attracted attention was the neat or chic design of the badge or pin. It was large enough for all practical purposes among ourselves, yet so modest as to forestall attracting the attention of outsiders, but trim enough to take its place among like ornaments so universally worn today, and the committee in charge deserve commendation for exercising such excellent taste.

Drs. W. C. Herbert and J. M. Thompson, of Detroit, Mich., demonstrated one of the unquestionably good things new to the majority, a method of reproducing the entire enamel of the tooth with porcelain without devitalizing the pulp. It is really an overlay made using inlay principles, the details of which were worked out by Dr. Edward B. Spaulding of Detroit, Mich. He, I believe,

*Read before the Chicago Dental Society.

gives another credit for the idea. The plan is to grind all remaining enamel from badly broken or decayed vital anterior teeth. Then grind and disk the remaining dentine to a conical shape with the base just beneath the gum and enough smaller than the root at that point to leave a shoulder at right angles to the perpendicular and about one-thirty-second of an inch in width around the entire tooth to act as a finishing line or base for the finished porcelain cap. Over this conical point of dentine burnish a piece of inlay platinum that was previously approximately adjusted by securing a measurement, and soldering the entire ends of the platinum together as we do for crown work, having the band deep enough to reach well under the gum, to insure an absolute fit at that point. Now grind and form of a cornucopia with the large end to the tissue. Now, using a twenty-six gauge iron wire, around over the platinum in place at the gingival line draw the matrix material tight at the neck by twisting the wire, and then carefully burnish until the platinum absolutely fits at every point, particularly at the shoulder and a trifle beyond under the gum, to insure an absolute fit at that point. Now grind and attach a facing to the platinum cap while in its place on the tooth and remove them together, and reproduce the lost part by adding porcelain body on to and around the platinum cone and underneath the facing and fusing it. When complete carefully remove the platinum cone from the inside of the porcelain cap and set the porcelain with cement as for inlays. The question might arise whether such a thin shell of porcelain would be strong, but it is said that they seldom break. Care is necessary while setting them on account of the lateral stress caused by the wedge-like form of the dentine cones.

Dr. F. E. Roach, of Chicago, Ill., showed a new porcelain body which is said to be a radical departure from the bodies now in use. Its appearance and action suggest that it might be a mixture of porcelain and cements, as it hardens shortly after mixing and resembles opaque porcelain when fused. It would seem to be a great advance in prosthetic work and, if as strong as it is said to be will soon undoubtedly become an established base for dentures, something we greatly need. It is said to shrink so very little that inlays can be made of it without the use of a matrix, by mixing it to a putty-like consistency and pressing it into the cavity and carving it to the

desired form. When partly hardened it is removed and fused; the cavity side is then covered with a thin layer of porcelain body and again pressed into the cavity; and when it becomes hard it is removed and fused once more, securing, it is said, a closer fit than when a matrix is used. This was not shown, thus standing unproven, so that when all is said and done we will be using a matrix for it—if translucent enough and of proper shades.

Dr. Roach also showed a new automatic time device that affords a means of uniformly baking porcelain without being obliged to watch the furnace during the fusing process.

It looks good, but depending as it does upon the fusing point of lead, a base metal, for its starting point, it would seem that on account of the clogging, clinging tendency of lead oxides, that it would lack the delicacy so necessary for exactness. However, it is new, and it is to be hoped that it may prove fitted for our needs.

Dr. Charles Allen, of Kansas City, Mo., demonstrated an original and practically new method of swaging matrix into cavities. It consisted of forcing gum camphor in excess on to the partially burnished matrix in the cavity with large burnishers until satisfied that adaptation was complete, when the matrix still containing the camphor gum was removed and held in the alcohol flame until the camphor was dispelled, leaving the matrix clean. If there was blood present in the matrix alcohol in drops from a syringe was applied until the camphor was partially dissolved and the blood diluted when the matrix was inverted and emptied. This was done to avoid oxidation of blood on the matrix.

This process applies only when very thin, 1-1000 inch, matrix is used, and is one of the good new things when used as a final swage.

Dr. Taggart, of Chicago, demonstrated the use of an original set of new roller burnishers in which the pean or ball on the end rolls. For the reason that it is possible to use them as a rigid burnisher by using the end or dead center, or a roller at will, they can not help but be a valuable adjunct to our porcelain outfits.

The oil necessary to keep them running smoothly will be a factor against their use after the filling is partially completed. The idea appeals to me as one of the good things seen.

He also showed the use of the nitrous oxide blow pipe in fusing low fusing porcelain. It seems to do it promptly enough and with-

out gasing, but just how practical it would be is problematical. At first sight it appears full of opportunities for uncertainties on account of the intensity of the heat and the lack of protection from chill during the cooling process.

Drs. Reeves and Cheeseman, of Chicago, demonstrated the use of sandarac varnish painted onto the platinum as a means of preventing the porcelain in inlay work from fusing to points on the matrix that were liable to be drawn from form by the shrinkage which accompanies fusing. The idea is, that if there is a film of the varnish at any desired point, as soon as the varnish is burned out—which occurs at a very low heat—the porcelain being thoroughly dried out will stand separated from the matrix wherever the sandarac had been applied, and in fusing will draw away, leaving a chink between it and the platinum, that represents the shrinkage. Afterward filling this chink with more body and fuse again. At first sight this looks good, but it does not prove out as it is claimed to, and the reason is, that no matter how accurately all else may be done, we are sure, on account of the shrinkage of the added porcelain, to have a space one-third of the thickness of the chink that was left at first, which is not close enough to warrant much consideration.

Dr. Reeves also demonstrated the use of blue enamel bodies placed deep in the filling to reflect through and produce what he calls “high lights” on the cusps and ridges of bicuspid and molars. This is something new and good and is a step forward in the solution of the color problem, and his selection of term “high lights” fills the bill.

Dr. O. H. Simpson, of Dodge City, Iowa, demonstrated the use of amalgamated mat gold (Vernon's or De Trey's) in constructing solid gold inlays by adding mercury to it until it assumed a putty like consistency when it can be packed or molded into any desired place or form, such as filling a matrix or building up cusps. Then by volatilizing the mercury over a slow Bunsen flame until the gold is again free, it is possible, by the aid of the blowpipe, to satisfy the now porous body of gold with solder until it is truly solid, and the gold will hold its form. Used in this way it not only has a place in gold inlay work, but in all solder work as a sure and easy way of filling chinks, as a lead to the solder, and to

prevent warpage. This is not entirely new but its application to a broader field seems to warrant consideration. Just how harmful the presence of mercury would be in some delicate solder cases was not shown, but its general use where there are porcelain facings would probably be unsatisfactory.

Dr. George T. Banzett, of Chicago, Ill., demonstrated the use of right and left burs for margin trimmers in cavity formation for porcelain inlays and because it is impossible to secure very small stones for this purpose, and because it is necessary to avoid cutting, except against the margin, with the bur, it would seem that there is a use for them at times where in obscure places a bur or stone must be rotated to the left to avoid chipping away the margins.

Dr. O. M. LeCron, St. Louis, Mo., exhibited a new guide for fusing porcelain by the use of fusible metals. The plan is gold alloyed with platinum to the point where it will fuse as the porcelain comes to a glaze and by having a separate alloy adjusted to each porcelain body it becomes possible to do accurate work, and is an improvement over the pure gold guide, provided he can depend upon the alloy being accurate and uniform.

Dr. Fossume, Hudson, N. Y., showed an original set of ivory pointed inlay burnishers, something new. The claim made for ivory as a burnisher is that it is not as harsh as steel and it is much more free, besides being in a measure elastic. The set shown, with two exceptions, appeared clumsy, probably because the material is not strong enough to permit of reducing to small or thin points. At first sight it would seem as if ivory would not wear well and that desirably shaped points would be hard to retain if made. On the whole they did not appear practical.

Dr. W. V.-B. Ames, of Chicago, demonstrated a method of creating a surface on the cavity side of a porcelain filling to which cement will attach itself.

The process is to mix porcelain and oxide of zinc in the proportion of three parts porcelain to two parts zinc oxide; put a layer of this on the matrix not allowing it to come to the margins, and fuse it while fusing the filling.

It is claimed that cement will adhere to this surface more firmly than to an etched surface and it seems logical, and if not a detriment as regards changing the color or strength of the inlay is an advance.

The strictly operative clinics were mostly upon gold fillings and they were, with one or two exceptions, good. The most pleasing feature was the tendency, when indicated, to use noncohesive gold, tin and gold, or tin alone as the case required, for starting all proximal fillings, or filling simple cavities. The only criticism would be that a tendency to over extension for prevention in cavity formation was universal. Such extensive cutting may be necessary to prevent recurrent caries, but what about the poor pulp?

Dr. Poundstone's paper on the cement problem in inlay work deserves commendation, because it presented a tangible starting point for further study along the same line. He also demonstrated that cement, when compressed as thinly as possible between the inlay and the cavity, occupies space equal at least to the thickness of the platinum matrix generally used for porcelain work, which dismisses the idea of so forming cavities as to take up the space occupied by the matrix because the cement takes it up and usually more.

The rest of the paper, judged by his final conclusion that the adhesive properties of cement was not continuous, and that fillings were held in place by the wedging of the particles of powder between the cavity and filling, seems illogical and needs further study.

When we recall the fact that gold inlays have done service for half a life time and are still firm, and that occasionally we find a cement filling whose flint like density all but defies the sharpest burs; and also that when for cause a porcelain filling is to be removed we find that even though it may be in a cavity free from retentive formation it will generally split before the cement yields, it will be seen that cement, when properly treated, does retain its adhesive properties practically indefinitely and the only possible reason for such a final conclusion is that either there was faulty manipulation of the cements or unintentional unjust treatment after.

A TABLE CLINIC SHOWING ADAPTABILITY OF TIN.

The cervical two-thirds of a proximo-occlusal cavity in a bicuspid was filled with ropes of tin over a piece of orange wood one-sixteenth of an inch square laid across the cervical floor of the cavity with the end against the pulpal wall. The piece of wood was then pulled out, leaving an opening at the cervical border the size of the wood just removed. A matrix covering the filling and lapping below onto the root was put around the entire tooth to conceal the

cervical border and the opening just above it. Then hand pluggers were used on the top of the filling in the usual way until it was apparently solid. When the matrix was removed the adaptation of the tin was so perfect at the cervical margin that a good magnifying glass failed to show imperfections and a sharp explorer found the filling uniformly condensed.

This is a trial that would benefit every one, for it unquestionably demonstrated the superiority of tin as a filling material for the protection of all deep or obscure cervical margins.

Ash & Son, London, England, exhibited a new gum forceps for excising the gum that so frequently partially overlaps erupting lower third molars. The plan is something on the order of plate nippers. The beak or cutting lip is a flat piece of steel about the width of a molar tooth, one-sixteenth of an inch thick, the end being a half circle and edged like a shear blade all the way round. The upper beak is a part circle that closely fits the lower beak around the outer end and sides and is edged like the inner one with the edge to meet the lower. In action the lower beak is introduced between the top of the tooth and the gum tissue to be removed. The act of closing the forceps tight cuts out a piece the size of the lower beak. This is an instrument we have long needed and looks good.

Dr. R. C. Brophy exhibited a particularly catchy and clever impression tray for crowns or small bridges. It is a duplicate in form and size of those we have long used. The feature is that it can be divided in the middle lengthwise, and, at the divide it is furnished with a septum, perhaps one-eighth of an inch high, that, when the cup is taken apart and removed, leaves the plaster impression nearly divided lengthwise, so that when taking an impression, as soon as the plaster sets, uncouple the cup, take away the sides one at a time and break away the cast in halves. Then, by coupling the cup together again, the separate parts of the cast will be held accurately together, thus avoiding the strain that occurs with the older methods.

Dr. Byram exhibited a pair of pliers to assist in the burnishing of matrix in inlay work. They resemble a plate punch somewhat, with rubber covered beaks, one of which is shaped to approximately fit the lingual surfaces of anterior teeth. The other beak for swaging is a conical piece of soft rubber, not unlike a lead pencil rubber turned to a snubbed point. In action the tooth containing the cavity, with the

matrix of platinum covering it, is grasped with the pliers with the pointed rubber beak in the cavity and pressure exerted, thus pressing or swaging the matrix home. As a last touch to the burnishing process for labial cavities, it would undoubtedly be a good instrument, but as an instrument for the whole process it is not good, because the magnifying glass showed that when the matrix did not tear in the bottom the margins were wrinkled and the only cases where the margins were absolutely free from wrinkles the matrix was badly torn in the bottom, showing that it is only indicated as a good final swager to follow burnishing.

PRACTICAL THERAPEUTICS.

THE TREATMENT OF ALVEOLAR ABSCESS.

BY J. P. BUCKLEY, PH. G., D. D. S., CHICAGO.

An alveolar abscess is a collection of pus in the tissues surrounding the roots of the teeth. The pus always results from a suppurative inflammation of the tissue, which was produced by escaping micro-organisms, ptomaines or gases from putrescent root canals. Alveolar abscesses are divided into two general classes—acute and chronic, the latter class being subdivided into two varieties, blind and discharging.

The treatment of an acute abscess does not differ materially from that of the chronic class, except in the control of pain, which always characterizes the former condition, and which, for the most part, is absent in the latter. The control of pain was quite generally considered in our article on septic pericementitis and incipient abscess, and, therefore, need not be here repeated. In this connection, however, we should remember that in these acute cases the continued irritation causes an excessive amount of blood to accumulate in the part and the exudation becomes so copious that the lymph channels are blocked and stasis follows. To prevent this condition as far as possible it is our duty, besides controlling the pain, to administer a saline cathartic, such as Seidlitz powders, magnesium sulphate (Epsom salts), or better than either of these, because of the facility with which it may be taken and its accepta-

bility to the stomach, is the official solution of magnesium citrate. The following prescription should be written for this preparation:

R Liquoris magnesi citratis f 3ij

Sig: Take one-half at once and the remaining half in one or two hours, if required.

I shall now direct your attention to the treatment of chronic abscesses of the blind variety. I refer here to abscesses without an external opening, except, perhaps, through a cavity in the offending tooth.

In discussing the therapeutics of this condition I shall ask my readers to bear in mind much that was said with reference to the chemistry of pulp decomposition in our article on the treatment of putrescent pulps, for in the treatment of blind abscesses we have the same mephitic gases with which to contend that are found in the former condition.

In treating these cases the rubber dam should be adjusted and the teeth which are included sterilized, especially the cavity in the affected tooth, after which the pulp chamber should be opened into with a suitable round bur. Usually the pus flows freely, in which case it is permitted to flow, pressure being made on the tissue immediately over the end of the root. It should be our effort, at each sitting, to mechanically evacuate as much of the pus as is possible. When this has been done the canals can be cleansed and the following remedy hermetically sealed in each canal on cotton:

R Tricresol	f 3 i j
Formalini	f 3 j

M. Sig: Use as directed.

In those cases where there is a copious flow of pus at the first sitting equal parts of formalin and tricresol can be used, and the dressing should be changed every day until it can be removed without the pus flowing from the canals. When pus is forming rapidly at the end of the roots the dressing soon becomes dissipated, the remedy is neutralized and it is a loss of time to leave it in the canals more than twenty-four hours. Ordinarily the pus formation can be checked in one or two treatments, at which time the modified formula, as suggested above, can be hermetically sealed within the tooth. It is now possible to change the dressing too often. The formation of pus has been checked and the tooth should not be

disturbed for ten days or two weeks in order to give nature a chance to effect a cure. If, at the end of this time, there is no evidence of pus, and the case gives a favorable history, the canals can be filled. Should, however, there be a slight odor, although the tooth has not caused any trouble, we are not justified in filling the root. In these cases we can further modify our original formula of formalin and tricoresol by taking one drop of this mixture and adding to it two drops of tricoresol. It should be remembered that the value of formaldehyde in any remedy to be used in these cases depends upon the power this agent has of uniting chemically with the poisonous ptomaines and irritating gases. (NH_3 and H_2S .) Where these substances are not present, formaldehyde is contra-indicated.

Quite frequently in these blind abscess cases, after the pus formation has been checked, we have a weeping of serum from the canals. I find this condition more often associated with the superior laterals than with any other teeth, although it is sometimes found in connection with all teeth from which abscesses have been treated. An excellent remedy to use here is eucalyptol, to which thymol has been added in the following proportion:

R Eucalyptol	f 3 j
Thymol	gr X

M. Sig: Use as directed.

If this remedy fails to check the secretion and the liquid is *serum* (not pus), no hesitancy need be had in filling the root although the canals should be moist.

Occasionally we find a chronic blind abscess where it is almost impossible to check the pus formation by applying drugs to the canals of the tooth. In those cases where the pus continues to flow freely when the dressing is removed at the third or fourth sitting, some complication can be expected. It is necessary here to adopt one of two methods of treatment—either force some stimulating agent through the apices of the roots after the pus has been mechanically evacuated, or else surgically establish an opening through the overlying process and soft tissue and treat as an ordinary discharging abscess which will be considered later.

While I do not hesitate to adopt the latter method if necessary to effect a cure, I find that most cases will yield nicely to the

former method of treatment. The stimulating agents used is a ten per cent solution of *trichloracetic acid*, or preferably a twenty-five per cent solution of *phenol sulphonic acid*. The latter preparation is made by taking equal parts of pure carbolic acid and sulphuric acid and adding the water while the mixture is hot. It is a difficult matter to dilute this acid, however, without precipitating the carbolic acid. In the United States Dispensatory we find the following directions: "*Para phenol sulphonic acid* (sulpho-carbolic acid), $C_6H_4(HSO_3)OH$, is produced by mixing equal parts of pure carbolic acid and strong sulphuric acid. The mixed liquids must be subjected to a temperature of $55^{\circ} C.$ ($131^{\circ} F.$) for several days, and then twenty parts of water should be added."

In the use of either of these agents here the pus must first be evacuated as much as is possible; then the agent can be gently forced through the apices and carbolic acid or tricresol sealed in the canals. It will be found that one or two treatments will usually be sufficient to check the formation of pus, when the case can be treated as an ordinary blind abscess.

The treatment of chronic discharging abscess will be the subject of our next article.

THE AMERICAN DENTIST ABROAD.

A TRIP AROUND THE WORLD.

BY J. W. EGBERT, D. D. S., MADRAS, INDIA.

(Continued from December Number.)

In due course, after twenty-one days on the briny deep, we reached Yokohama. The feeling of solid ground under one's feet after three weeks of tossing, heaving, rolling on shipboard, is an enjoyable sensation, and to set foot in Japan was one of our cherished ambitions. As the day was Sunday we went up to Tokyo to see that city and the celebration of the last day of the Japanese New Year. Miss Seidmore and Lefcadio Hearn and Pierre Loti and Anoto Watonna have told you about Japan in such a fascinating way that I'll only recommend you to re-read "*Madame Chrysanthemum*" or "*Jinricksha Days in Japan*" to know what we saw

and how we enjoyed it. I envy any man his first trip to Japan, and especially if he is there in April and May. American dentistry has had many good representatives in Japan and the Japs have been swift to learn from Smith, Ottofy and others whose names are well known to you. We went down to Kobe and spent a night there in a Japanese inn. It was cold weather and the bed room was the usual one without any furniture and only a heavy cotton-padded comforter to sleep on and another to cover you. I surveyed the



Yokohama, Japan.

bed and wondered how much of me would stick out at each end, as I'm six feet, three and one-half inches. My friend, Villiger, said, "By gosh, Doc, I think we get our toes froze off!" and thinking that he might be right we asked for a fire. It was brought by a dainty little damsel and put *in the bed*. We went to bed. At two a. m. Villiger, who had two fires put in his bed, woke me up and a very amusing sight met my gaze. Villiger had thrown off his kimona and was dripping with perspiration and said, "Py golly, Doc, I feel yoost like I was in a Russian bath." He removed one

stove and was still plenty warm. It was an amusing experience.

Through the Inland Sea is a most entrancing trip and its beauties are peculiar to Japan. At Nagasaki we saw the first real preparations for war and the beautiful harbor was full of battle ships, cruisers, torpedo boats and destroyers. The Japs were for war to a man and when one knows that a Jap never fights till he means to kill, you will understand why they are doing so well now. We all liked the Japanese and I think they have the most artistic



Street in Tokio, Japan.

country on this globe, certainly the most so that I have seen. From Nagasaki to Shanghai was a two days' run and we anchored at the Woo-Sing Bar. Here we bade good bye to our friend, Dr. Smith, and we were sorry to part from him. He was an ideal American gentleman and we were glad he was a dentist. Drs. Ivy and Robinson and a number of good American dentists are in Shanghai, and our own Dr. Kimball was there a number of years. At Hong Kong we met Dr. Noble and found him the same genial, pleasant gentleman that he was in 1898 and in 1900 when I met him in

Hong Kong and Paris. He enjoys a splendid practice and has many monuments of his skill in all parts of the world. In Singapore we called on Dr. Reel and were royally received and entertained. He, too, is a prince of good fellows and is associated with Dr. Noble in practice. In Penang we had the privilege of eating a Dorian. If you want a picturesque description of the Dorian I would recommend you to read it in "Following the Equator," by Mark Twain. It is described in the chapter that deals with Rangoon, if I remember correctly.

Sailing through southern seas to Colombo was a treat after the cold of the North Pacific and in two weeks we had come from



Kobe, Japan.

Arctic winter, 52° 50' N., to the region of eternal summer. It was good to be back in the tropics again and to be clothed in light, airy silk instead of being swathed in heavy garments of wool. On January 30th we arrived in Madras after seven months of traveling, in which we had covered 35,500 miles by land and sea and had visited Africa, Europe, Great Britain, North America, Japan,



Traveler's Palm, Singapore.

China, the Straits Settlements, Ceylon and India, and had met fellow practitioners in every big city visited. On the whole the survey of the world's American dentists was satisfactory, but here, as elsewhere, we have the charlatan who trades on our name and usually runs a very brief course, for when a man is proven true out here and gains a clientele, they are true as steel and can not

be driven away from their dentist. On Monday, February 1, I began practice and was glad to get into harness again. I found that my trip had been beneficial and the new ideas assumed a financial value as I incorporated them into my daily practice. The life of a successful dentist out here is a very busy one and all of our work is done by appointment—oftentimes my book is full for two weeks ahead. I begin at 7:30 a. m. and work till 4:30, with an interval of one hour for breakfast at 12 noon. The class of prac-



Wistaria Vine. Japan.

tice is distinctly high and one can do just what he pleases, generally. We make Jenkins inlays, and everything else down the line, and have now educated our patients in the value of oral hygiene and gold as a saver of teeth. It would astonish you to know how many English people of high position and means do not know what it is to have their teeth cleaned by a dentist. The result is that pyorrhea is very prevalent and nearly every mouth exhibits the loss of valuable teeth. The English idea is that Americans

have the worst teeth in the world. My opinion, after eight years practice among English people, is that as a nation they have bad teeth, and they neglect the care of their teeth to a shocking degree. I have seen graduates from Oxford and Edinburgh, men in high position, who have *never* cleaned their teeth. English women object to gold fillings but do not object to unsightly rings of serumal calculus. The cause is not hard to find. English dentists as a class can not make gold fillings, hence the usual argument, "this tooth will not hold gold," or "gold is unsightly." I believe in showing as little gold as possible, but if it comes to a choice of an unsightly disintegrating cement or an unsightly, smooth, perfect gold filling, I'll take the gold, for it is an honest material and saves teeth, and thus I argue. In crown and bridge work we do not know the all-gold crown anterior to the second bicuspid and we are glad that no all-gold centrals are asked for, for we should not make them. We have many cases for extraction and use 5 per cent cocaine or chloroform as we think best. This seems suicidal to you in Chicago, and so it would be there, but here conditions are different and chloroform is the ideal general anæsthetic and I am informed by the senior surgeon of the Madras General Hospital that since the introduction of chloroform as an anæsthetic agent that they have not had a single fatality, though it has been given many thousands of times to all classes of people and by *all* sorts of anæsthetists. So I should say that with the exception of chloroform a practice here is much the same as a high class practice at home and good, conscientious work is the rule. The names of Schrantz, '97, C. C. D. S., Davison, '95, C. C. D. S., Barr, '95, N. W., H. P. Smith, C. C. D. S., Durand, Lundy, etc., are well known and guarantee the status of the profession in India. The English practitioners are numerous and do the usual class of English work.

I do not wish to mislead any one as to the condition of the field for dentists here or in China. The natives are mostly poor and only the comparatively wealthy can afford to pay our fees. They are very conservative and do not rush to a new man as people do at home. There are only about six cities here that can support a dentist and Madras with a European population of 3,500, has three American, three English and six or seven native dentists. Calcutta and Bombay are equally well supplied. The expenses of

operating a practice are very heavy, for one must keep a large stock of teeth, gold, amalgam and the thousand and one things that are daily needed.

(To be continued.)

THE IMPORTANCE OF DIET IN THE MAINTENANCE OF A HEALTHY CONDITION OF THE ORAL CAVITY.*

BY S. C. SIMS, M. D., D. D. S., STERLING, ILL.

I do not expect in this paper to bring out anything new; simply to bring up for discussion a subject which, it seems to me, is frequently neglected, in our efforts to correct faulty conditions of the oral cavity.

I feel safe in making the assertion that the proper regulation of the diet, both in quantity and quality, is of more importance than any other factor in establishing and maintaining a healthy condition of the oral cavity. Now, if this is true, its importance as a factor in the production or prevention of dental caries is established, as, according to Dr. Miller, the forces that make for decay come from without the tooth.

Some years ago, when I practiced medicine, I frequently had impressed upon me, in my treatment of children, the lack of judgment, and I might almost say "common horse sense," on the part of the parents in regulating the diet of their little ones.

The same person who will give a limited amount of oats, corn and hay to his driving horse, which he wishes to keep in good condition, or, in other words, good health, will feed his little girl, whom he loves very dearly, upon every delicacy that human ingenuity can concoct and then wonder that the child has no appetite for the good old substantials, bread and butter, potatoes and meat; or, if the parents avoid the delicacies, they may err in other directions.

A very common mistake is made by parents, who are otherwise careful and judicious, in the quantity of the food given. Whenever the child cries it must have some food, when frequently it has had too much and has the colic in consequence. This applies mostly to the

*Read before the Northern Illinois Dental Society, October, 1904.

child in arms. The horse above referred to was permitted, for its own good, to get thoroughly hungry; but the same judicious regulation of diet for the little ones is seldom practiced in this day of plenty.

The feeding of a child should be at regular intervals; at birth every two hours and gradually lengthening the periods between meals until at the age of three and a half years and after the child may eat at the table, three meals a day.

Never, under any circumstances, should a child be allowed to eat between meals, even if it be bread and butter. Cut out cakes and bonbons, not only partially, but wholly; also fried food, tea, coffee, wine and beer. If these directions are faithfully carried out, the child's appetite will be natural and he will eat proper food at meals and can be safely permitted to eat until satisfied. I feel convinced that to the injudicious control and regulation of the children's diet may be attributed the frequent and early caries found in children's teeth at the present time.

Over feeding, if the digestive powers are weak, will result, like improper feeding, in indigestion with the accompanying conditions of mal-assimilation, auto-intoxication and derangement of all the emunctory organs.

Such a condition must necessarily result in mal-development of all the bodily organs, including the teeth, and as the condition of the oral cavity is a fair index of the condition of the stomach, the poorly developed teeth are additionally handicapped by an unhealthy condition of the oral secretions.

If the digestive powers are good and equal to the strain of over-feeding, we have as a result the fat baby, almost if not quite as bad as the dyspeptic one, for the baby that is fat beyond natural plumpness is in about the same condition as the fat man—in both there is lowered vitality and imperfect metabolism.

In the adult conditions are different and so the results of improper feeding are somewhat changed, mostly, however, in degree. The various organs of the body, including the teeth, have reached their full development and, barring the influence of heredity and eruptive diseases of childhood, the perfectness of this development will depend almost wholly upon the proper regulation of the diet during the earlier years of life.

When criticising the diet of a young person whose teeth are decaying rapidly and whose oral cavity and secretions show gastric catarrh, one often hears the statement that one or both parents have perfect teeth and are free from digestive troubles, notwithstanding they both eat the same kind of food as the child. There is one explanation for such cases, whether right or wrong, which is open for discussion, namely, that said parents, in early days, led a simpler and more strenuous life and in the matter of food more frequently not getting enough than otherwise and the cooking was plain.

The organs of their bodies were thus allowed to develop normally and perfectly and are naturally better able than the defective and undeveloped organs of the children to dispose of the various concoctions often put into the stomach and called food.

The most unwholesome way and, unfortunately, a very common way of cooking food is that called frying. When food is fried the melted fat used in the process is permitted to thoroughly permeate the food, covering each little particle of the same with a layer of fat. Now, as the saliva and gastric juice are powerless to dissolve fat, food in this condition is not affected by the digestive processes, owing to this covering of fat, until it reaches the small intestines, when the bile and pancreatic juice dissolve the fats and uncover the albuminoids and starches to the digestive fluids, so that the digestion of these latter food principles is just starting when it should have been more than half completed in the mouth and stomach.

All foodstuffs in which melted fat has been permitted by the heat of cooking to permeate the structure of the food is rendered indigestible just in proportion to the relative amount of fat so used. This includes not only fried foods, but all foods in which shortening is used, such as biscuits and pastry.

Now, is it surprising when we consider the frequency of this style of cooking that we have gastric catarrh with the accompanyingropy saliva? This gastritis, though sufficient with the accompanying condition of the system to produce a saliva destructive to the teeth, may be so slight in its subjective manifestations that the patient thinks that he or she is in perfect health. Frequently the only sign outside of the mouth is a voracious appetite or, at worst, a capricious appetite with occasional slight nausea and irregularity of the bowels and perhaps a periodic attack of migraine.

It is rather difficult to persuade a person whose only trouble from his point of view is to get enough to eat that he is in danger and needs to diet himself, yet such in reality is often the truth; for leaving out of consideration the preservation of the teeth, if such an one could look into the future and see his final outcome in diseases of faulty metabolism, it seems to me that he would put a check upon his appetite. He would see obesity with all that that entails or the uric acid condition of the system giving rise to rheumatism, Bright's disease, diabetes, various nervous disorders, arterio-sclerosis with the final ending, as a result of the high blood pressure, of heart failure or apoplexy.

But in this day, when the laity is wise upon every subject, it seems, but the very important one of preserving health, such a vision of the future is not vouchsafed to many outside the profession.

The difficulty above referred to I have encountered in almost every case when I have endeavored to correct the diet, making results much less satisfactory than they would have been had directions been carried out.

One case I may report, however; Mr. H., age twenty-one years, came to these parts from the East eighteen months prior to his first visit to my office. During these eighteen months he had been working and living on a farm; his food, while here, was largely fried, while in the East his food was mostly boiled and baked, seldom fried. He stated that when he left the East none of his teeth were decayed, whereas when I first saw him his oral secretions were mucous and acid, papillæ of the tongue red and prominent and decay of the teeth was rapid and extensive. By cutting off the fried food and making other dietary regulations and flushing the kidneys and bowels with plenty of water, some of which was of a saline, laxative nature, I succeeded in greatly improving the condition of the oral cavity and I believe made it possible for my dental work to be of lasting benefit, whereas in the previous condition of the mouth I would not have given much for its lasting powers. Results in other cases, as far as they went, were encouraging.

In the culinary departments a retrograde process is needed. Go back to plain cooking and, if this does not tempt the appetite, in many cases it would be far better to fast until it did rather than eat some fancy dish.

The frying pan should be discarded, for it seems to me that if the devil ever took a hand at cooking, the frying pan would be his favorite instrument.

The amount of water one drinks is important. One can hardly drink too much water except at meals. Water should be taken before and between meals and at bed-time. Persons of the hyper-acid condition of the system frequently drink very little water and then only at meals, when they should not. Such persons should drink plenty of water whether they desire it or not; it will flush the kidneys and correct the constipation that often exists.

I have not referred as yet to Riggs' disease or pyorrhœa alveolaris and its relation to the so-called uric acid diathesis.

The object of my paper is to draw attention to that condition of the mouth more common and more amenable to treatment than pyorrhœa that is associated with a certain degree of gastritis and stomatitis. How great a part the uric acid condition plays in producing the gastric catarrh and stomatitis independent of indiscretion in diet is a question. There seems to be little doubt that the uric acid diathesis predisposes to inflammation of all mucous membranes and the weight of opinion is also in favor of uric acid as the cause of pyorrhœa. However this may be, hyper-acidity is due to faulty metabolism associated with dietary indiscretion, both in quantity and kind of food taken, and the same instructions given above will apply equally as well; restricted diet, drink plenty of water with some alkaline, laxative mineral water. Take as much exercise as possible, cut off the red meats and especially tea, coffee and meat soups, as they are very rich in uric acid and xanthin.

Salicylate of soda is doubtless the most potent drug for ridding the system of the urates and next to that the alkalies, but these should not be given together.

In conclusion, may I add that I think it is a duty incumbent upon us as members of the dental profession to impress upon the minds of our patrons and the public, as far as we can reach it, the importance of proper diet in the preservation of their teeth as well as general health? And this is especially true, because we as dentists often have opportunity to see evidences of indiscretion in diet long before the advice of the physician is sought.

CEMENT LININGS.*

BY F. S. TRICKEY, D. D. S., FREEPORT, ILL.

So much has been written in reference to cement linings under gold and alloy, and it has been recommended for the good it serves in so many different ways, that it is not the purpose of this paper to introduce anything new or original, but rather to emphasize anew something of the good service cement will render when used in this relation.

The anchorage properties of cement probably led to its introduction as a cavity liner, but other commendable properties served to stimulate its use through an experimental stage. Among these may be noted, a preventative of thermal changes, an aid to building gold into cavities difficult of access, a strengthener of frail cavity walls, a preventive of the disclosure of gold or alloy back of enamel lightly supported by dentine. I never became sufficiently convinced of the merits of cement for any of these purposes to introduce it in my practice except in a limited way.

However, it has always been my plan to keep a record in my dental ledger of the procedure with each filling that I insert, so that I am enabled through the return visits of the patient to note the merits or demerits of any departure from a regular order.

Aided by this record a careful watch over my work convinced me that appearances always tally in favor of fillings whose records indicated a cement lining.

If my conclusions were correct, and in my own practice I was decidedly convinced that they were, I became interested in an effort to study into the causes that make for these results; and while I am far from claiming anything like infallibility in my conclusions, yet I believe that the benefits derived from cement linings may be largely covered by the word compatibility.

Believing cement to be the material most compatible to tooth structure and also the material most easily manipulated in this relation has led me to use it almost universally as a lining in cavities to be filled with either gold or alloy, I am convinced that

*Read before the Northern Illinois Dental Society, October, 1904.

the right quantity mixed to a proper consistency, placed beneath gold foil in the cavity and subjected to a pressure required to weld the gold, will so perfectly seal the dental tubuli beneath the same, that we may entirely prevent the black line of discoloration always present between cohesive gold and the tooth substance where the cavity is unlined.

Like results are just as easily and positively reached when used under an alloy, by carefully and thoroughly burnishing a small quantity of the filling material over the entire dentinal surface of the previously cement-lined cavity. It has been claimed by some operators that cement prevents amalgam from shrinking away from the cavity wall. This may be true but I think it very hard to verify and believe that the better appearance of such fillings in the mouth of the patient is due to the cement sealing of the dental tubuli beneath the amalgam rather than to non shrinkage.

However, it is true that the dark lines that so generally mark the outline of amalgam fillings are not present where the dentinal surfaces have been covered with a layer of cement.

The *modus operandi* seems too simple to require mention. My own practice is to prepare all cavities the same as I would if no cement were used, never having sufficient confidence to rely in the least measure on the cement anchorage to hold the finished filling in place. When all is in readiness for the filling I mix the cement to such a consistency that a small particle of it will quite readily drop from a common nerve broach, and with this broach I carry it into the cavity. My reason for using an instrument as fine as a broach for this purpose is because the amount that clings to it is so small that I am enabled to carry it to the floor of the cavity without smearing the side walls.

With my broach (very large cavities for gold excepted) I now spread this small particle of cement over the entire dentinal surface of the cavity. I am now ready for the immediate insertion of any gold or alloy that is preferred.

If for gold I usually place the proper sized pellet of unannealed foil in the cavity and press lightly to place with one of several pluggers that I keep for this special work. I now place over this first pellet, Watt's crystal gold and press all firmly to place. I prefer the foil immediately over the cement because it will not tear

under the crystal form when subjected to the pressure necessary to the welding of the same, and thus the mixing of particles of the soft cement through the filling material is entirely obviated; as soon as enough crystal gold is built in to perfectly anchor the filling and insure firm and constant pressure on the cement lining, I carefully examine and remove any particle of cement that may possibly have squeezed up around the gold. When assured that all enamel margins are clear I exchange my pluggers and proceed to anneal my gold and finish in the ordinary manner.

In large gold fillings it is sometimes necessary to make more than one mix of cement, the second being placed in the cavity after the first part of the filling is inserted.

For alloy fillings the procedure is the same, using small pieces of the filling material which are thoroughly burnished into the cavity lining until firmly anchored as noted above. Now all margins are carefully examined and cleared from any overhanging material.

If desired I now adjust my matrix, or proceed to complete the filling with no further regard to the cement lining.

THE PAINLESS REMOVAL OF THE PULP BY COCAINE.*

BY C. E. BARTHOLF, D. D. S., UNION GROVE, WIS.

When an essayist writes a paper on any subject to be read before a society, he selects one that is his hobby, or, in other words, one on which he is a crank. The painless removal of the live pulp by the use of cocaine is a subject which is not new, though perhaps there are some here today who do not know of the virtues of the method, but if they will follow my method closely I feel sure that they will be adherents to it in the future. It is practiced with success by a few and with no success by a great many, as I found in the discussion which followed my paper on this same subject before the Southern Wisconsin Dental Association at Janesville last June, simply because they did not work it right.

When I began using this method almost two years ago I thought that I was the first to use it in this manner, but I found that others

*Read before the Northern Illinois Dental Society, October, 1904.

were doing the same before I did. However, I am glad to know that I am working along the same lines as others who are higher up in the profession. I am pleased to bring this subject before you and if any of you can get as much good out of the method as I have since I began its use I shall feel that I have accomplished a great good for the profession.

You are all acquainted with the way that we find pulps which require removing before we can proceed with the filling. The next time you find one of these, instead of applying your arsenic treatment as of old, place one or two crystals of cocaine directly on the bleeding pulp, cover it with a ball of vulcanite rubber large enough to fill the cavity nicely and press down lightly with a ball burnisher or any other suitable instrument that will go easily in the cavity. As soon as sensation in the tooth has left, exert a little more force and gradually increase the amount of force as the sensation diminishes until you are able to rotate the burnisher in the cavity with all the force you wish and no pain to the patient whatever.

Now remove the plug of rubber, and without wiping out the cavity immediately open up the pulp chamber with a No. 5 or No. 6 round bur and cut out all of the contents of the chamber, clean out the debris and with a suitable broach push right down at the side of the nerve to the apex, give it a few turns and out comes the nerve and your operation is completed. From this point on you may pursue whatever course you deem advisable.

My method is to fill immediately when the condition of the pulp is healthy; if the condition is inflammatory, then give it one or two treatments, as may be necessary, before your permanent filling.

There are three points which I wish to bring out in my paper, viz.: First—You can assure your patient that there will be no pain, the thing which is most essential, thereby winning the confidence of the patient and making your operation just that much easier. Second—The tooth will not discolor, for reason of using no discoloring agent. Third—That the time occupied is but a few minutes longer than the insertion of an ordinary amalgam filling.

I have used this method in deciduous teeth also and find that it works with perfect success there as well as in the adult mouth.

This I would like to have you bear in mind. Use nothing but the cocaine crystal and not more than one or two crystals at a time, as

there is no benefit derived from the use of more. One does the work as well as a whole lot and you do not run the chance of it oozing out by the side of the vulcanite plug over the tissues of the mouth.

With your permission I will close with a story, from which a moral may be drawn.

Mr. Smith and Mr. Brown, neighbors, became involved in a quarrel over a line fence, from which they sought satisfaction in the justice court. Mr. Brown was beaten and in a passion he declared that he would appeal it to the circuit court. "All right," says Mr. Smith, "I'll be there." This enraged Mr. Brown and he said that if he was beaten in the circuit court he would carry it to the supreme court. "All right," calmly says Mr. Smith, "I'll be there." Mr. Brown now flew into a rage and he declared that if he was beaten in the supreme court he would carry it to—, he stopped a moment and then burst out, "I'll carry it to hell." "All right," calmly replied Mr. Smith, "I won't be there, but I'll send my lawyer, Mr. Jones."

Moral.—When you unexpectedly run onto an exposed pulp and you think, "Well, this is hell," don't say it; just calmly say, "All right, I won't put arsenic in, but I will use cocaine and finish up the case right away. It will take only a few minutes longer and my patient will thank me for it."

INSTRUCTION OF THE PUBLIC TO THE VALUE OF DENTAL TREATMENT IN RELATION TO GENERAL HEALTH.*

BY Z. W. MOSS, D. D. S., DIXON, ILL.

One need not be particularly optimistic in one's views to declare that we as a profession are being greatly aided in our share of the care of the health of the general public by the physician, the trained nurse and the enlightened men and women of today.

We are ready to acknowledge the progress made along these lines, but we demand that the world come to a higher and better appreciation of what the modern dentist means to the general health.

The time has passed when the specialist ruled and commanded a higher price than the majority of people could pay.

*Read before the Northern Illinois Dental Society, October, 1904.

We are all specialists now, owing to the broadened scope of our college courses, the excellency of our dental magazines and societies and the practiced eye which comprehends details coming under its daily observation.

When the dental world awoke to the realization that a knowledge of anatomy and medicine was necessary to the education of the more perfect dentist, the medical world should have reached out for a knowledge of odontology. Until it does the co-operation between the professions will not stand on equal basis.

Along with the improved trend of medical knowledge the great multitude of people should also receive light upon the importance of dental science and treatment in relation to their general health and welfare.

The country dentist as well as he who deals with the incoming and outgoing tide of humanity of the city office comes in contact with one of the most difficult problems which has presented itself to the profession, in caring for the teeth of the poor. If in some cases the neglect has been so great that the patient is in an unhealthy and disgusting condition, we wonder how we can correct this state of affairs. He may be lazy and he may be ignorant. You can do nothing in the first place, but if he knows no better than to abuse his health through neglect, then give him a talking to, and your advice and influence may not only reach him, but his children and the generations which follow after him.

We are ready to concede that the education of the public is what is most needed, and now, as a body of men who are here to do, let us attempt to educate outside of our offices. Let us try to put into practice suggestions of men who are older and wiser than ourselves.

People should be educated in the care of their teeth just as they are educated along other lines. Oral hygiene should be included among the studies the teacher is called upon to instruct her pupils daily. She should know thoroughly its fundamental principles. She should be required to know the condition of the teeth of her pupils by an examination of them daily, in any way she may choose. There should be a law of the State of Illinois placing doctors of dental surgery in the normal schools for the purpose of instructing teachers in oral hygiene and oral anatomy.

Another way which I would kindly suggest which would be a

great benefit in instructing the general public to the value of dental treatment would be to form local societies in all towns, and one of the duties of the members should be that each week one be chosen to write an article in plain English, as interesting as possible in composition, upon the care of the teeth, which would be published in the daily newspaper.

There need be no smack of the advertiser about them, no name signed, but as real benefits to the community I am sure they would be of great value.

In our small towns and villages within the vicinity we are very apt to forget about those cities where dwell the inhabitants of large public institutions, such as the prisons, reformatories, asylums for the insane and orphanages—in fact, hundreds of institutions where no attention is paid to the care of the teeth of their inmates.

We can only say we wish there might, in the generosity of our country's heart, be some provision for tooth brushes and antiseptic washes, and hope that in time to come there may be that hygienic provision made.

The results of dental treatment are manifested in the prophylactic effects which they produce on the health of the entire organism, and in order to obtain these results the public should be instructed in prophylactic dentistry as well as public and private hygiene, which deals with the whole class and individually. Hygiene teaches us the manner of preserving the health and occupies a sure position in scientific and public life. Its great value for the social development of the country is known by all enlightened people. It does not only prevent disease through personal sanitary care, but it also tries to improve the health of all the organs of the body. For many years sanitary measures have been growing, and it can be said beyond a doubt that interest in hygiene has increased with amazing rapidity.

Take, as an example, any town of ordinary size, with its water system and sewerage, where its people are considerate of the advice of the health officers, thus proving that they have become educated up to the realization of hygienic and sanitary conditions of every-day life, which produce better health in the general public. Instruction in hygiene will soon become popularized, so that practice should become united to theory and theory to practice.

If the individual were to know the value of oral hygiene and

would appoint himself as health officer over his own body, looking first to the aid of the dental treatment to put his teeth in perfect condition, his general health would not need nostrums to keep it in repair.

With the past to look back upon, we are convinced that the future contains large fields and more work to be done and greater progress to be made in the dental world.

THE REORGANIZATION OF THE ILLINOIS STATE DENTAL SOCIETY.*

BY ARTHUR D. BLACK, B. S., M. D., D. D. S., CHICAGO, ILL.

At the annual meeting of the Illinois State Dental Society in 1886, a committee was appointed to organize district societies throughout the State, and in 1887 this committee reported the organization of four district societies; the Eastern, with twenty-four members; Western, with thirty-four; Northern, forty-one; Southern, twenty-four; in addition to the Central, previously organized. As distinctly stated in the circular issued by the committee of the State Society at that time, there was absolutely no connection or relationship between these organizations and the State Society. When they had been organized, the committee of the State Society was dismissed, its work having been completed. Of these five district societies, the Northern has been the most prosperous and successful, having gradually increased its membership to nearly one hundred and fifty. The Southern District Society remains, having now a membership of fifty, but it has not for many years maintained a membership outside of a group of about ten counties, north and south of East St. Louis, close to the Mississippi River. The Eastern Society no longer exists, and the Central and Western have united in the formation of the First District Society, which has a membership of about seventy-five.

As we look back over the past seventeen years we can not but conclude that much good has resulted from the organization of

*Read before the Northern Illinois Dental Society, Sterling, Ill., October 12, 1904.

these societies and much credit is due the men who have labored for their success.

There have been many changes in methods of doing business, in methods of education, in almost every line of work during these years. Everything is being reorganized to meet and cope with new conditions, and we believe the time has arrived when the dental profession of the State of Illinois should be thoroughly reorganized. The Illinois State Dental Society at its meeting in May of this year, adopted radical changes in its constitution and appointed a committee to carry out the work of reorganization. The plan involves a more thorough organization of the profession of the State than was undertaken by the committee seventeen years ago, and the strongest feature of the present plan is directly opposite; instead of having a number of societies throughout the State, in no way connected, the new plan purposes that every member of every dental organization in the State shall be a member of the central body—the State Society. There are about three thousand dentists in Illinois, of whom about one-third, or one thousand, are now members of some dental society, local, district, or State, and yet when any proposition involving the general good of the profession comes up, it is out of the question, under the present organization, to get a unity of effort from more than a few hundred men, even though the entire thousand may be favorable. When the committee of the State Society went before the last legislature with the dental bill, almost the first question put to them was concerning the number of members in the State Society, and they had to acknowledge that they represented only twelve per cent of the dentists of the State, while their bill asked that the State Society be allowed to appoint sixty-six per cent of the Board of Dental Examiners. We believe that the members of this Northern District Society and of the other district and local societies of the State are equally interested in the passage of good laws and in other propositions involving the welfare of the public from the dental standpoint, and we think that we should have such an organization that the full force of all good dentists could be brought to bear when occasions arise. There is no reason why this can not be done without in any way hampering the work of the previously organized district and local societies. In fact, the reorganization committee fully believes that

every society of every kind in the State will be materially benefited and the usefulness of each increased.

Stated briefly, the plan of reorganization is as follows: The organization throughout the State of local societies, each composed of the dentists of one or more counties, according to local conditions. All of these societies are to be organized on the same general plan, have similar constitutions and exactly the same rules covering the admission of members and the code of ethics. All existing local societies have been asked to make such changes in their constitutions and rules as will make them co-ordinate with those newly organized. All local societies are to be component parts of the State Society, and every member of every local society is accepted into full membership in the State Society, and the State Society will accept no member who is not a member of one of these component societies, except from counties in which local societies are not yet organized. As each local society is organized and becomes a component part of the State Society, the State Society recognizes the local society as its representative in that territory. By this plan, each local society is a committee on membership and ethics for its territory. A man can not join the State Society except through the local and he can not remain in the State Society if his conduct is objectionable to the members of the local society. Every dentist must be good enough to be acceptable to his fellow practitioners at home, or he can not belong to the State Society.

There is a provision in the amended constitution of the State Society covering district societies, and we feel that this should be of particular interest at this meeting. District societies may be organized and recognized by the State Society, the only provision being that their membership shall be composed entirely of members of component societies—of the local societies which are parts of the State Society. Let us suppose that we have in this State six or seven district societies, and it is our hope that we shall have that many within the next year or two. Suppose that all of these societies are parts of the State Society, every man who is a member of any dental society in the State should be a member of the State Society, and no man could belong to any society unless he belonged to his local organization. We would then be able to

get a unity of effort that would represent the full strength of the organized profession of the State. There need be no closer relationship between the district and State Society than there is now, except in the one item of the rules governing membership, and surely this society should be as anxious as any to have the right kind of members. The State Society believes it can safely trust the election of its members to the local societies, and we believe that the district societies could also.

Let us consider for a moment the effect that this plan will have on the membership of this society. According to the list furnished by your secretary in April, you had 138 members, distributed as follows: Cook county, thirty-three; Kane, twenty-three; Stephenson, seventeen; Winnebago, seventeen; Will, fourteen; Jc Daviess, seven; Ogle, six; Whiteside, five; Grundy and Lee, two each, and Boone, Bureau, Carroll, De Kalb, Du Page, Henry, Kankakee, Lake, La Salle, McHenry, McLean, Tazewell, one each. One hundred and twenty-two of your 138 members are from eight counties, the remaining sixteen are from fourteen counties. In all but one of the eight counties, local societies are already organized or are in process of organization on the new plan, and your membership in these counties should be increased rather than diminished. In the fourteen counties in which you now have only one or two members each—sixteen members in all—there are 280 dentists, and eleven of these counties are already in process of organization, and it is probable that the others will be within a few months. If local societies are organized in these counties, the membership of the Northern District Society will certainly be increased very materially.

We do not ask this society to take any action in this matter at this time. We believe, however, that within a year, practically all of your members will be members of the local societies of Northern Illinois and that you will then be desirous of joining with the State Society in this work.

In closing I wish to mention the fact that we have sent out lists of dentists to the various sections of the State to be checked, and have in each instance requested that all unethical men be marked so that invitations will not be mailed to them, and I must congratulate the profession of the northwestern portion of the State

on the percentage of ethical men here as compared with other sections of the State.

We are also learning from our lists that a large number of the advertising men are constantly shifting from one place to another, indicating that they do not gain and hold the confidence of the people as well as do the ethical men.

However, there can be no doubt that in many sections the public does not recognize sufficiently the difference between the ethical and unethical practitioner, and we believe that no one thing will do more to establish the confidence of the public with the ethical men than the organization by them of local societies. The fact that the dentists of any community are friendly, that they have good words to say of one another, that they go fishing together, that they work together to give the public they serve the best possible dentistry, gives such men a position of respect which is worth much. The Illinois State Dental Society comes to you on your seventeenth anniversary and asks the members of this society to take an active interest in the work of organizing your respective sections to the end that the dentists of Illinois may be able to work together for those things which are good and set an example to be followed by other States.

ABSTRACT OF THE PAPERS READ BEFORE THE SECTION
ON ORAL SURGERY OF THE FOURTH INTER-
NATIONAL DENTAL CONGRESS, HELD IN
ST. LOUIS, MO., AUGUST 29 TO
SEPTEMBER 3, 1904.*

BY CHARLES P. PRUYN, M. D., D. D. S., CHICAGO, ILL.

The chairman of this section was Dr. G. V. I. Brown, of Milwaukee, Wis., and the secretary, Dr. Arthur D. Black, of Chicago.

The papers read before this section were scholarly, scientific and replete with good thoughts and excellent suggestions. In epitomizing, therefore, the proceedings of this section, it is almost impossible to do the authors that justice which their meritorious and interesting

*Read before the Odontographic Society of Chicago, November, 1904.

contributions deserve, and the best I can hope to do is to give you the salient points of each paper.

CHAIRMAN'S ADDRESS.

First, let me say a few words regarding the chairman's address. The chairman called attention briefly to those most important considerations which, being of vital interest to oral surgery, should receive the best attention that the Fourth International Dental Congress might, by the consensus of opinion, express, establish and define a position for future guidance. With this in view, the chairman divided his subject into three heads:

1. The relation of oral surgery to general medicine.
2. The line of demarkation between those operations that properly belong to the oral surgeon, and those outside of the field of his best usefulness.
3. The most urgent need of advancing both the standing and the usefulness of this work by definite diagnostic systems.

In order that each division of the subjects prepared for the program might have presentation from the highest and best source obtainable, practitioners of dentistry and medicine were invited to contribute, without any line of distinction, and, indeed, no such line should be recognized without seriously crippling the scientific value of the section by such limitations.

The chairman stated that there were two distinct classes of practitioners sometimes arrogating to themselves the title of oral surgeon; the one, for want of surgical training, confining his operative efforts to minor surgical operations quite within the province of the daily practitioner of dentistry; the other, with a broad knowledge of general surgery, but with little or no dental training, doing major operations skillfully, but many others, perhaps of less degree, though no less important, either not at all or very imperfectly at best.

One attempting to limit his practice to this field finds the scope and nature of his work but little understood in professional ranks and naturally much less among the laity. Furthermore, he is more or less in danger of undertaking too much, and therefore laying himself open to criticism on the ground that he can rightfully claim no special fitness for operations too far removed from his own anatomical division, or of doing too little, and thus meriting respect from neither dental nor general surgeons.

It was hoped that the published results of this congress would give to the world a new conception of the wonderful progress and the surgical possibilities of our special field, and the aim in the preparation of the program was to bring out by practical representation the results in each of the chief divisions, in order that a full and creditable showing might be made in the published transactions of the congress.

To this end and, further, to emphasize the need of more carefully established rules for diagnostic guidance, the chairman illustrated a number of cases from his practice, and gave both the ante-operative conditions and post operative results, some of these being of special interest because of similarity of objective symptoms, while the etiologic factors were, as a matter of fact, entirely different.

In the evolution of every science there is a period of empiricism which holds almost undisputed sway. Conclusions are reached, statements made, advocates of one theory or another are aroused into activity, each in turn to be displaced by the slower, sounder conclusions of scientific research. No better example of this could be found than is evidenced by the progress of dental and oral surgery during the last decade, but on every hand today there is a growing intolerance of theoretical propositions, unbacked by the weight of absolutely unimpeachable results in both clinical and laboratory tests. More and more do we realize the breadth of study necessary to gather facts for the explanation of the phenomena that in the light of more superficial knowledge had seemed all-sufficient, and as we draw about us, in closer alliance, other sciences with which we have come to recognize a more intimate relation, and as with each step we near the true basal principles, it may be said that at last we have come into our own and have attained majority in the world of science.

Dr. Eugene S. Talbot, of Chicago, read an interesting and scholarly paper on the "Etiology of Cleft Palate." He divided cleft palate into congenital and post-congenital. The post-congenital, while having a predisposing factor of terato-logic nature, is often produced by a determining nosologic factor. Congenital cleft palate is divisible into two kinds, complete and partial—complete, when the fissure extends the entire length from the uvula to and including the anterior alveolar process and even the lips; partial, when only a small part of

the structure is involved. Thus the cleft may extend through the anterior alveolar process, involving only the incisive bones, which is very rare. When present, single or double harelip almost invariably coexists. Cases occur where a small portion of the anterior alveolar process and jaw are involved with one or two teeth. The hard palate may be merely involved to the extent of a small fissure, or the whole palate may be wanting. The soft palate may contain the cleft, or the uvula alone may. Cases occur in which the non-development of the intermaxillary bones produces fissures of the lip.

The problems involved in cleft palate are those of embryogeny as modified by the law of economy of growth, by remote atavism, by type heredity and by the results of characters acquired during the periods of dentition and adolescence and prior to the senile. As soon as the external nares are separated from the mouth, in the embryo, there occurs a partition between the nasal pits and the mouth. This partition, in which the intermaxillary bone is differentiated later, is supplemented by another partition, the true palate, which shuts off the upper part of the oral cavity from the lower, thus adding the upper part to the nasal chamber. The palate is a secondary structure which divides the mouth into an upper respiratory passage and a lower lingual or digestive passage. The palate arises as two shelf-like growths of the inner side of each maxillary process and is completed by the union of the two shelves in the median line.

In dealing with the influence of the factors named on embryogeny, the influences of disturbances of balance at an early period, which would strengthen disappearing structures at the expense of later acquired structures, have to be considered. Such a disturbance would overcome the effects of disuse and create overgrowths of primitive structures at the expense of later acquired structures, leading to arrest, atrophy, or even disappearance of these last. The structures of the mouth and nose being exceedingly variable in evolution, and the structures of the jaws and teeth having in man taken an embryonic trend for the benefit of the body as a whole, under the operation of the law of economy of growth, disturbances of balance are peculiarly apt to occur here.

Interferences with palate formation must begin comparatively early in embryogeny and hence must imply decided defect on the part of the parents. Any maternal factor, whether arising during a par-

ticular pregnancy or inherited, may so check the development of the palate as to produce the various types of deficiency which are observed by surgeons.

In dealing with the development of the palate, both pre- and post-congenitally, the relations of the hypophysis or pituitary body have to be taken into account, since it has been demonstrated that this body exerts an influence over body growth and the structures thereto related.

That cleft palate may be transmissible, Demarquary, Roux, Tre-lat, Follin and Duplay have shown, but such transmission is and must be rare, from the factors unfavorable to direct transmission entering into heredity, inclusive of maternal environment during embryogeny. The deformity rarely occurs, if at all, from maternal impressions. In most of the cases which have come under observation, when one parent had a cleft palate all the children have been born perfectly developed, even though dread of transmitting the deformity was never absent from the mind of the mother.

The factors involved in the reproduction of congenital cleft palate are partly of an embryological nature, which is connected with the evolution of ossification, which last in turn is involved in the development of the hypophysis. These factors are not necessarily connected with heredity, albeit the influence of maternal environment can not be completely excluded. The influences checking palatal development must be present very early in embryogeny, since the ossification of the palate center is quite early in evidence. The factors affecting this center of ossification may entirely arrest ossification, may arrest it irregularly, or may merely arrest its potentiality. In the latter case improved maternal environment has favorable results. In hereditarily defective cases, however, there is an irregularity of balance giving an undue sway to certain early acquired structures at the expense of others later acquired, which leads to increased irregularity rather than its disappearance. The influence of hypophysis extracts on deficient osseous development is as yet, according to the author, merely suggested. Sufficient is known, however, to indicate that it might be well to use hypophysis extract in cleft palate on the possibility that the arrest was merely an arrest of potentiality, not an arrest of growth.

Dr. Thomas L. Gilmer, of Chicago, followed with a paper entitled "Surgical Training in the Dental Schools."

In this paper there were embodied many practical ideas and excellent suggestions, and, among other things, the essayist stated that if dentistry is to maintain itself as a learned profession it must lay a broad foundation of the fundamentals, sufficiently firm to carry a superstructure which will qualify its graduates to practice their calling in the widest possible manner. There are many vexatious questions in dentistry yet unsolved, which must be relegated to general medicine for a solution unless we know more of pathology, more of bacteriology and more of other fundamentals of medicine. From clinical experience all practitioners know the serious train of pathological conditions which, at times, follow the filling of teeth or the insertion of bridges and artificial dentures. It may be no more serious or far-reaching than an alveolar abscess, but we sometimes find as a sequence of an alveolar abscess, necrosis involving the whole or part of the lower jaw, or caries of the upper jaw, or empyema of the maxillary sinus, or occasionally a general pyema. These conditions and many others are familiar to you.

A knowledge of therapeutics and its practical application, and a knowledge of surgical pathology and surgical technique may and often does prevent the serious complications mentioned, besides it gives strength and confidence to the dentist when confronted by such conditions.

The things which the dentist must know, which are not necessary to be known by the general practitioner, add enough to his college work to make his course equal in extent to the curriculum of most medical schools. If the dentist is wise and serves his patrons to the best possible advantage, he does not utilize his knowledge only to the extent of making a careful examination of the teeth to discover disease in them and the immediately adjacent tissue, but he goes over the entire oral cavity, and if he has sufficient information of disease he may, by early diagnosis, oftentimes save his patient much suffering and perhaps his life by this additional service.

Dr. Gilmer expressed the opinion that all of surgery should not be concentrated, as is the custom in this country, into the senior year. The principles of surgery should be taught in the junior year, and a part of surgical technique also, leaving mainly clinical and operative surgery for the senior year. Along with the principles of surgery, a course on the cadaver is very desirable, as it not only keeps

the student's mind familiar with anatomy, but it increases his interest in surgery, and unless interest in the subject is stimulated, he, feeling that it is not one of the most important parts of dentistry, never gets a full knowledge of it. The junior year should include surgical bacteriology in its relation to inflammation, sepsis, asepsis and antisepsis, also the treatment of inflammation. It should also include wounds, the healing of wounds with regeneration of tissues, instrumentation, suturing and suture materials, the application of dressings and bandaging. On the cadaver should be taught ligation of blood vessels, tracheotomy, resection of the jaws and nerves, and also Gasserian ganglion operations. This course would bring the student to his senior year fully equipped to comprehend and enjoy a course in clinical and operative surgery. To do this work will require not less than one lecture and one clinic a week are necessary to properly bring the remaining portion of the subject before students.

The following subjects should be covered by lectures and exemplified in clinic in the senior year: Extraction of teeth, including impacted teeth, fractures of the bones of the face and jaws, dislocations, ankylosis of the jaw, resection of the roots of teeth for the cure of persistent alveolar abscess, implantation, replantation, and transplantation of teeth, surgical treatment of alveolar abscess, caries and necrosis of bone, diseases of the maxillary sinus, aneurysms, resection of the jaws and resection of the branches of the fifth nerve, Gasserian ganglion operations, surgical diseases of the tongue and mucous membrane of the mouth, with diseases of the lips, surgical treatment of actinomycosis, cleft palate and harelip operations, tumors and cysts of the mouth and jaws. Along with this course and commencing with it anesthesia should be taught and exemplified on animals, and on human subjects in the clinic.

He urged that the greatest time be given to minor surgical operations, such as the dentist must do every day in his practice, and not so much to the more serious operations, such as the operation for the removal of the Gasserian ganglion, cleft palate and harelip operations, which, as a rule, must go to the specialist in oral surgery or to the general surgeon.

A technical course in the manufacture of splints and other appliances for the treatment of fractures of the jaws should be given to more fully equip the student in this work.

He suggested that when it is practicable the teaching of oral surgery should be done by one who has had experience in the practice of dentistry, and who has had a medical education, as this combination better fits him for the work of teaching the subject. The general surgeon may be well qualified to teach the principles of surgery and the more serious operations referred to, but from lack of experience in the dentist's field he can not be as efficient a teacher as one having knowledge of special pathology of the teeth and jaws and the technique which is gained by constantly operating in the mouth.

Dr. A. Hamilton Levings, of Milwaukee, Wis., discussed "The Importance and Methods of Early Diagnosis of Malignant Growths Affecting the Maxillary Bone."

Some excellent differential diagnostic points were brought out by the author of this paper. In the majority of the malignant tumors of the maxillary bones, the first symptom is a pain in the jaw or in a tooth. Following this there may be swelling and then loosening of the tooth or teeth. With these symptoms the way is made easy for the patient and dentist to consider the trouble as of no great moment or as one which most concerns the tooth. The importance of an early diagnosis is so great that in every case of pain in a tooth or in the jaw, especially if later associated with swelling of the gums or expansion of the bone, the physician or dentist should not consider himself as having done his whole duty to his patient unless he has exhausted every method at his command, which could aid him in establishing a correct diagnosis. Every case of tumor of the maxillary bone should be considered possibly malignant until it has been proven benign. At least one-half dozen cases of round-cell sarcoma, taking origin from the maxillary bones or their coverings, have come under the author's observation, in which treatment has been carried on for four or seven months under the mistaken idea that the patient was suffering from necrosis or caries of the jaw, neuralgia or chronic pyogenic infection. In other cases there has been no special effort to establish a diagnosis, the cases being treated as of no great importance and expectantly until such time as the diagnosis might become clear. In any case of odontalgia, or in any case in which there is a pathological process going on in the maxillary bones, any delay in making a diagnosis or in not using all of the means for that purpose at command is inexcusable. An early diagnosis may be

difficult, but it is possible in nearly every case if one be on the alert and fully prepared to use every means at his command for that purpose.

In considering clinical methods of diagnosis, the author said that the malignant tumors which implicate the maxillary bones or their coverings are the sarcomata, the endotheliomata and the carcinomata. There are two varieties of sarcomatous growths which take origin from the periosteum. One of these is known as an epulis, the other as a periosteal sarcoma. This growth is in direct relation with the crown of one or more teeth along which it is projected toward the free border, and it may require several months, perhaps a year, to reach the size of a small almond nut. The second variety of the sarcomatous growths take their origin from the osteogenetic layer of the periosteum or from the alveo-dental membrane. They are consequently primarily situated between the membrane and the bone or within a tooth socket. Some of these tumors grow very slowly, while others grow rapidly. The sarcomatous epulis is not likely to be mistaken for any other tumor, unless it is a fibroid growth in the same situation; but the increased vascularity, redness, softness and accelerated growth of the former make it ordinarily easy of differentiation. A periosteal sarcoma, other than an epulis, is perhaps not so readily differentiated. Pyogenic periostitis, if acute, comes on suddenly and is accompanied by intense pain, high fever, great tenderness and marked constitutional disturbance. The very mention of the condition would readily lead one to differentiate it from a chronic periosteal process of sarcomatous origin. Chronic pyogenic periostitis will give a history of some chronic inflammatory process with infection, such as a diseased tooth, ulceration about the gums, or within the mouth, or a trauma with infection. Less frequently, the process will be due to an exanthematous or rheumatoid affection. In these cases there will be localized pain, swelling and tenderness; swelling never marked, fever slight or absent, the condition not being progressive nor leading to the formation of a tumor.

The medullary sarcomatous tumors are of frequent occurrence. They take origin from the interior of the alveolar process, and either from the osteogenetic layer of the medulla or from the tooth socket. The giant-cell sarcoma, one of the most frequent, is a semi-benign growth. It grows slowly, taking a year or more to reach any consid-

erable size, and during this time may not produce metastasis or affect the health or well-being of the individual. The symptoms of these tumors were discussed at length.

Phosphorus necrosis, with its gradual onset as a diffuse periostitis, accompanied by the loosening of many teeth, with profuse suppuration and a history of showing exposure to the fumes of phosphorus, will readily lead one to differentiate it from a sarcomatous growth. Mercurial necrosis occurring after the administration of large doses of mercury is preceded by intense pyalism, with its profuse flow of saliva. It comes on suddenly and is followed by marked swelling of the periosteum and gums and loosening of the teeth. Arsenical necrosis may occur as the result of the application of arsenious acids within the cavity of a carious tooth, but in these cases the necrosis is very limited in extent and is usually confined to the alveolus of the affected tooth.

A syphilitic gumma within the medulla, occurring either as the result of acquired or inherited syphilis, may lead to the gradual expansion and absorption of the bone and will be difficult of differentiation from a sarcoma without a history of syphilis and without an exploratory incision.

The benign growths which implicate the interior of the maxillary bones are the odontomata, fibromata, osteomata, the cysts, and the benign epithelial growths.

The carcinomatous growths of the maxillary bones or their coverings are represented by three species—first, the epitheliomatous ulcer; second, the adenocarcinoma; third, the cystic or solid carcinomatous or epitheliomatous growth, which occurs within the alveolar processes from the sequestered cells of the enamel organ. But very few of these cases have so far been reported.

One of the most practical and interesting papers contributed to the congress was that by Dr. John S. Marshall, formerly of this city, but now president of the Examining and Supervising Board of Dental Surgeons, United States Army. His paper was entitled "The Treatment of Fractures of the Mandible." Among the most difficult fractures of the bones which the surgeon is called upon to treat are those which involve the lower jaw or mandible, and these difficulties are increased in proportion to the extent of the traumatism, the degree of displacement of the fragments, the amount of bone tissue lost, the

age of the patient, the state of health, the habits and environments. The extent and character of the injury, the imperfect apposition of the fractured parts of the bone, the age, state of health, habits and environment of the patient are all important factors in modifying the process of repair. In an ordinary uncomplicated case of fracture of the mandible, union is usually complete in three or four weeks. In those with poor health or depraved habits, particularly the drink habit, union is often greatly delayed. Imperfect apposition of the fractured parts of the bone is responsible for more cases of delayed union than all of the other factors combined. This statement holds equally true of fractures of the long bone. It becomes the duty, therefore, of the oral surgeon to adopt those measures of treatment which will the most surely obtain and secure a correct apposition of the fractured parts of the bone.

The author classified fractures of the mandible under simple and complicated. The complicated were divided into compound multiple and comminuted. Each type of fracture of the mandible was then discussed at great length.

The conditions which are absolutely essential to the successful treatment of fractures, no matter where located, are (1) accurate adjustment of the fractured portions of the bone; (2) immobility of the parts until union has taken place.

In those cases in which the bone is comminuted or a portion carried away, as in gunshot injuries, it will be impossible to bring the fractured parts of the bone into apposition without causing a shortening of that side of the jaw. It becomes necessary, therefore, to place the remaining fragments of the mandible in their normal position and maintain them in that position by an interdental splint, or other mechanical device, until the wound is healed, trusting to nature in the one case to unite the comminuted fragments or form new bone in their place, and in the other that new bone may be found to take the place of the section lost, or, failing in this, that a fibrous band will be formed of sufficient strength to support a bridge splint made after the plan suggested by Dr. Patterson, of Kansas City.

Reproduction of new bone to fill a space in the mandible produced by a gunshot injury or a surgical operation is very rare; but the author of this paper had the good fortune to report such a case

in the *Dental Cosmos* about a year ago. The essayist then discussed at considerable length the adjustment of the fracture, and the maintenance of immobility of the fracture, after which he went into the details of constructing the various forms of interdental splints, which was followed by a description of the method of suturing with wire. There was one point in the paper which was forcibly impressed upon me, namely, that the successful oral surgeon never ties himself down to one method of treatment, for no two cases are exactly alike in character or individual features, consequently they require variation in methods, appliances, or operations adapted to the requirements of each individual case. The simplest method that is effective is always the best, and he believes this to be a sound principle by which to govern all operations for the treatment of this class of injuries.

The essayist has treated a considerable number of fractures of the bones of the face and he has always found the best results to follow the simplest methods of treatment. .

Dr. Marshall then reported twelve cases of fractures of the mandible, all of which were interesting from the standpoint of the oral surgeon, the last one being one of gunshot fracture, which was narrated in great detail, and the special features of the case emphasized.

Dr. James G. Kiernan, of Chicago, contributed a paper entitled "Embryogenetic Congenital and Acquired Stomato-Neurologic Relations."

From the standpoint of embryology and its relation to the teeth, this was considered a profound and scholarly contribution.

The well known embryonic relations of the skin and nervous system become still more intimately evident when the mouth and face are considered. The tooth is a survival of a placoid scale, which has been drawn within the sphere of influence of the mouth, but has retained its end organ characteristics in its new location. Here it is influenced by conditions underlying the changes and clefts of the most changing and shifting of embryological modifications. The jaw and structures connected therewith have departed from one type to assume either completely or potentially increased importance in reference to the brain, which later it loses for esthetic purposes and the benefit of the organism as a whole. The lower human types have a jaw once employed for fighting purposes and which preserves, for

accommodation of large canines, the spaces known as diastema. These spaces, when disappearing normally under the law of economy of growth, throw no strain on the teeth; whatever strain there occurs is then due to the contests of megadont types with each other. The human mouth, moreover, up to a certain period of embryogeny, has polyphyodont potentialities, which, unless checked, interfere with proper development. As the teeth and the hair are intimately related, such interference causes disturbance of trophic functions, which sacrifice the teeth for the benefit of the hair, even producing what may be called hairy changes in the teeth themselves, such as occur in the Greenland whale. The embryogenetic nerve relations of the teeth in this particular reappear in the relations of dental nerve disturbances to partial baldness. This condition likewise occurs in another form in pregnancy, where in place of the usual tooth changes the skin takes on extravagantly hairy growths. Nerve actions are always of three types, and this is the case whether nerves be sympathetic or cerebro-spinal.

Nerves are physiologically divisible into three classes according to their actions—motor, sensory, or trophic. The local nerve supply of the tooth is chiefly trophic and sensory, albeit some slight motor potentiality is retained from the old placoid days. From trophic disturbances arise the various destructions in the tooth itself, which occur either from changes in the local nerve, or from disturbances secondary to great neuroses like locomotor ataxia, or the psychoneuroses like paretic dementia. Here marked emphatic trophic disorders of the jaws and teeth occur. This state of things is due to a disturbance of nutritive balance by which undue sway in nutrition occurs, whereby growth in a part is forced to an extent which results in its destruction. Further relations between the teeth, jaws and the central nervous system appear in the various expressions of congenital defect commonly called the stigmata of degeneracy. These may be expressions of actual or potential defect. The ordinary argument drawn from the absence of nerve tissue against the nerve origin of disorder is no longer tenable, according to the author, since certain segmental areas have physiologically demonstrable nervous powers, although nerve structure is not as yet histologically demonstrable. Present data justify the conclusion that the mouth and face are the seat of congenital and post-natal nerve disorders to a greater extent

than the other parts of the body, and may serve as danger signals to constitutional disturbances, both from a diagnostic and therapeutic point of view.

Dr. M. H. Cryer, of Philadelphia, Pa., read a paper on "Some Points in Regard to Ankylosis of the Temporo-Mandibular Articulation." He described a very interesting case, with methods of treatment, results, and presented conclusions drawn therefrom.

Dr. W. J. Roe, of Philadelphia, Pa., presented a "Report of Four Cases of Ankylosis of the Temporo-Maxillary Articulation."

Cases 1 and 2 were bilateral bony ankylosis of traumatic origin; case 3, unilateral bony ankylosis of traumatic origin; case 4, bilateral bony ankylosis of traumatic origin; case 5, unilateral fibrous ankylosis following operation, and treatment for carcinoma; case 6, unilateral fibrous ankylosis complicated by noma.

Dr. T. W. Brophy, of Chicago, contributed a paper on "Necessity for Early Operation for Cleft Palate."

DENTISTRY IN THE ORIENT.*

BY LOUIS OTTOFY, D. D. S., MANILA, P. I.

It has been my hope for several years to come back to Chicago, and I assure you that I never looked forward with so much pleasure to anything as to meet again with the members of this society. I met with you last in May, 1898, and I am glad to know that none of the members of the society have passed away, and that the membership has increased.

The topic assigned to me by the secretary is "Dentistry in the Orient."

As you will remember, when I left here I went directly to Japan, where I intended to start a dental college. Immediately upon my arrival I took up the study of the people and conditions, as I expected to remain there for a number of years. I got well acquainted with the profession in every phase, with the foreigners as well as with the natives.

Dentistry in Japan has not advanced to the extent many of us

*Read before the Odontological Society of Chicago.

believe, judging from the general advance made by Japan. But there are reasons for that. Japan is a poor country. I believe there are not in Japan five men who are rated at more than a million yen—that is, \$500,000 in gold—and not to exceed forty men who are worth 200,000 yen. A man rated at 10,000 yen is considered a wealthy man. Dentistry is a profession that requires means, and inasmuch as the majority of the Japanese are poor people, the conditions for the progress of dentistry are not favorable.

At that time there were in Japan only five men who were graduates of dental colleges of this country. The profession numbers about 300. About half a dozen of the native dentists are prosperous. The remainder do not amount to much, either professionally or financially. Those who have been educated in this country soon fall back into the habits of their native land.

I met a graduate of Harvard who had forgotten practically all the English he knew. He had fallen back into the old kimona, and his office would not be a credit to a third-class dentist here in Chicago. He did business in the slipshod way characteristic of the Japanese. There is no encouragement there. The fees are too small.

On one occasion which I witnessed, the patient came in; she and the dentist sat down, had tea, chatted a while, and then she got into the chair. The doctor treated the tooth, after which they sat down again, had a cigarette, talked a little more, and the fee was 10 cents. They spent a full half hour. Those are about the fees, and the result is that the Japanese dentists do very little and make little progress.

The better class of offices are fitted up with modern appliances and the office is neatly furnished and clean, according to Japanese custom. The small itinerant dentist has a little laboratory somewhere near the door, where everything is within easy reach, as he does everything sitting down. Some of them are very dirty—the instruments and everything, and it is not a pleasant prospect to think of having them do any work in the mouth.

The foreigners in Japan number only 2,500 persons, including the diplomatic corps, missionaries and merchants. The largest number that ever lived there was 5,000. The principal settlement is Yokohama. There are no business houses in Tokyo, the capital;

only missionaries and the diplomatic corps. It is only an hour's ride from Yokohama, where all the business is done.

The peculiarity of foreign practice in Japan is that if a man has once obtained a foothold and become firmly established, it is almost impossible for anybody to dislodge him. I have been asked time and again about the opportunities for dentists in the East. I know one place where there is an opportunity for a man to enter into a first-class practice, that is at Hong Kong. That man would have to be about twenty-five years of age; possess a first-class education, good address, and means enough to remain for five or ten years without having to depend upon his income. After living there for four or five years, he will be invited to the clubs, and he may be invited to become a member. Then he begins to get business, and then no one can dislodge him, except by similar means.

There are three foreign dentists in Yokohama, one doing exceedingly well, and the other two merely existing. Two in Kobe, one doing well, the other existing. They depend on the foreign and floating population, which is enormous. In Yokohama I have done work for people from all over the world. Dr. Slade, of Kobe, until the war broke out, used to make a regular trip through Korea, Dalny and Port Arthur. Other places were visited by men from Shanghai.

At the time I was there, there were three dental schools in Japan. They were really offices where men permitted students to enter and gave private lectures. There is one school there conducted by Dr. Takayama, the leading dentist there, whose wife or daughter-in-law is related to a nobleman, and he has succeeded in preventing the organization of a dental college in the university. He has a large garden surrounding his residence, and in the center of this garden is the school.

The university is organized in first-class shape on the lines of European universities. They have courses that lead to the B. S. and B. A. degrees, and they have a splendid medical department, hospitals, engineering department and a veterinary school, and a fine library. The minister of education and the president of the university told me that the finances of Japan were in poor shape, and that they could not get any allowance from the Diet to support the

university. The new medical buildings were only partially completed, and covered over awaiting an appropriation to complete them.

Takayama's school is really a large private clinic. He has hired a number of dentists to give lectures and to hold a partial course, in a way. Under the law any one who has attended a regularly incorporated school is entitled to pass the examination at the end of two years before a board of examiners. Naturally, as it has been impossible to organize another school, all the students come from Takayama's school. They have quite a library, consisting mostly of dental journals from this country, obtained by writing for them. But the school is a profitable one for the owner and his students are sure of passing the board of examiners.

Japan has a number of dental journals. They are nicely printed and usually contain translations of the best articles from our journals. For years they ran serially textbooks, such as Harris and Richardson's Mechanical Dentistry. They even copied the illustrations, so that they have an American textbook written in Japanese.

There are two dental societies in Tokio, but they are always at loggerheads and do not seem to be able to get together and hold meetings. I was invited to give some lectures on general dental topics, which I did, and I found them a very nice lot of men and eager to learn. One man gave me his card and asked me to come and see him. I did, and was astonished to find a regular tooth factory. The teeth are not so well made as are ours, but he had no opportunity to learn how to make them except what he had picked up from dental journals. In order to save the platinum pins, they knocked off the back part of the tooth and then fastened in ordinary pins. They sold for a cent and a half apiece; sets are sold for five yen.

They are splendid in mechanical work. They finish their plates finely, and although their impressions are not well taken, yet when the work is completed it is very nice looking and admirably done. They imitate the dark teeth worn according to the old custom by using black rubber and then set them in red rubber. They are made beautifully and the tooth outline is perfect.

There are three dental depots in Tokio. The business is done in a peculiar way. An American coming into the shop with shoes on, all he can do is to sit on the edge of a platform; when he takes

his shoes off, they bring tea and cigarettes, the wife and children flock around and whatever is wanted is brought to the buyer. I went up stairs and was surprised at the stock they had. They carry Ash's goods, some of White's and some of Justi's. As soon as they get them, they take them apart and imitate them perfectly. A Japanese told me that they make all the dental instruments as well as they make them in America. But I found that the beaks of the forceps get wider and they bend a little, something I can not understand because three or four hundred years ago the Japanese made swords that were as good as the famous Damascus blades. Yet today they can not make an excavator that will hold its temper. They imitate everything.

The patent law of Japan is peculiar. If a patent on an article is to be valid, the patent must have been obtained first in Japan. If a patent is taken out elsewhere first, the article can not be patented in Japan, although it can be copyrighted, but that is no protection at all. The result is that no matter what is brought there, they imitate it.

The principal dealer there showed me some forceps which I thought looked like White's, but they did not have the finish. They bore their trademark and I thought that, perhaps, they were making special instruments for Japan. Later I learned that this dealer had made the forceps, and that his initials, which were O. W., had been worked in so that they looked like S. S. W. It is a simple thing for a Japanese to imitate a trademark, and they do it all the time. They are a very interesting people in every way.

As to China: There are no dentists there, except in Shanghai, which is called the Paris of the Orient. Some of the Chinese residents are very rich, and the foreigners all live in settlements, which are perfect reproductions of their native countries, except the Americans. They have a postoffice and live around that. There are about half a dozen first-class American dentists there, and a number of Chinese. Most of the dentists there go away on trips up as far as Peking and south as far as Cochin, China, and in that way do quite a little business. In these communities live foreigners with plenty of means and they pay big fees.

Further south is Hong Kong, with only one dentist, the only man who has been able to get a foothold there. I visited a number of

the Chinese there. They are very proud of having learned from some American or Englishman. But they are very primitive. Their work consists of extracting teeth and making plates. One of the Chinese was a graduate of a Philadelphia school and he was proud of it. He spoke English fluently and was up-to-date in every way. He had a fine office.

In the Philippine Islands there was no dentistry, so far as I can learn, up to 1860. Now the Japanese, independent of any information they received from Europeans, took impressions in some soft compound and made a model and to that model fitted sets of teeth of wood, carved them and colored them, in the same way as here and in Europe. How they learned that I do not know. I tried to get some of these sets in Japan, but found that they were so beautifully imitated that it was impossible to tell the false from the real. To some sets they attached ivory teeth or human teeth with holes bored through and tied to the plate. For the posterior teeth they took tacks or nails to hold the teeth in place.

In the Philippines they do not seem to have done even that. There seems to be nothing except extracting teeth and that only by surgeons from Europe. But in 1860 an American went there and opened up an office. He did very well. There were few Americans there in those days, although today the oldest business house in Manila is an American firm, Peabody, of New York. This American dentist did well and took in a native, who is now 80 years old, and taught him dentistry. He went away, leaving instruments and business in the native's hands and nothing has been heard from him since. This native is there now, and from what he says the American did some beautiful work in the way of gold fillings. He also did some furnace work because this man learned from him the baking of porcelain teeth and has a set which he made some thirty years ago. I do not know what they baked them in. And the native learned all this from Pettingill, the American dentist.

After that a number of Americans went there but never stayed very long. I imagine the conditions were bad and that these men went in, made all the money they could, and left.

What little the natives know of dentistry they learned from this one man. His son, grandson, nephews, nieces and other relatives went to his office and learned what they could. He got Spanish

translations of our books, Harris' Principles and Practice, and he took Spanish journals and everything he could get. Nearly everything he has learned is from dental journals and translations.

Of the other natives, one man attended the dental school in Japan, another went to Philadelphia, and one attended school in England. Only one native is a graduate. They are anxious to learn but have not had the facilities and opportunities. They picked up crown and bridge work from what they saw Americans do. How they do it I do not know. I think they carve teeth and stamp out crowns, but their crowns are as good as those made by any American.

A number of foreigners went out with the troops. At the time of the American occupation there was only one American dentist in Manila, Dr. Sanger. As many as twenty dentists have been in Manila since I came there, but one after another left, and now there are only five there. The practice of the foreigners is almost exclusively among the foreigners. We have 10,000 Americans, French, German, Spanish, Portuguese; 200,000 Filipinos and 20,000 Chinese. The Filipinos are not desirable patients, unless you can get down to their way of doing business. The custom is not to pay the original price that is asked for anything and if you want their business you must do as they do. With the patient the whole family comes into your office, smoking and standing around the chair all the time. And they have no regard for time; never keep an appointment, coming either too early or too late. But there are some very nice Filipinos there who have been abroad, and they are very desirable clients. The native dentists handle the Filipino very nicely and they get along with them.

There has never been a dental journal there. I organized a little society with which the Filipinos were connected, but we get along with difficulty because of the lack of knowledge of a common language in which we could converse. In April one of the natives read a very interesting little paper in Spanish, the first of its kind. They are very hospitable and very delightful associates. They are anxious to learn and ready to tell anything they can. They will never contradict you and will never differ with you in your ideas because that would be exceedingly impolite, and they are the very essence of politeness.

They have a dental department in connection with the Santo

Tomasso University, the old Catholic University, which is older than any university on this continent. It was confined to theology and the arts until the middle of this century, when they added medicine and some twenty years ago pharmacy. They have a fairly good school, but are behind in their teaching. Some eight years ago they tried to open a dental department, treating and extracting teeth. The insurrection broke out and the school was abandoned and there is nothing there now. But, on the whole, I look forward to considerable awakening there.

The Filipinos are taking up everything that is new; they adapt themselves to everything. Both men and women are being educated, and some of them abroad. There is nothing there in dentistry simply because they have not had the opportunity to learn, but when the time comes, I think you will hear from the Filipinos, much to their credit.

GINGIVARIUM.

BY A. C. HEWETT, LL. B., M. D., CHICAGO.

In the November number of THE DENTAL REVIEW was published a formula for what I had named Gingivarium (Latin, gingiva, the gum). I have been so frequently asked about the compound not only, but concerning some of the ingredients and their properties and uses, that I find it a task to reply to each inquiry. I ask, therefore, that such answer as I give may have place herein.

I make no apology for the compound or for the assemblage of its different components. To one of them I owe my prolonged life, my present robust condition, and nearly perfect health. To the compound I am indebted for efficient aid in the cure of a virulent attack of pyorrhœa alveolaris, and also prophylaxis against its return. To praise it need I a stronger incentive?

I have often wished that a department of Pharmacognosis and Pharmacology might have place in our leading dental journals, that an intimate knowledge of simples and chemicals needed, and of preparing them for use by dentists, be more readily attainable than existing facilities allow. Is such intimate knowledge desirable and necessary? I answer yes, unless we are contented to be and remain mere mechanics, compelled to refrain from prescribing for diseased conditions, except empirically (quackishly).

It may seem ungracious to say that the majority of inquiries received in relation to said formula indicate lack of knowledge; yet they show a commendable desire for information not within reach of the interrogators. I am glad to receive inquiries and wish I might answer all by personal letters.

Two of the simples used are of the "Newer Remedies" and literature in elucidation of them is not easily obtainable. But even concerning two ingredients of the \mathcal{R} which are of the commonest use I fancy there is not too much known.

It were interesting to know what proportion of the near 30,000 dentists of the United States and of Canada could answer the question, "What are the properties and uses of oil of cloves?" (the first ingredient named) so that the answer could honestly be marked 100. How many of them could tell that the oil of cloves contains caryophyllic acid, or eugenol (after Prince Eugene of Savoy); that it (acid) consists of twenty atoms of carbon, twelve atoms of hydrogen and four atoms of oxygen? Could one-half of them tell what the clove is—fruit, seed or berry, and that it is an undeveloped blossom-bud, picked before opened and dried? Whether it grows on a bush like a tea-bud, on a vine like the *Mitchella repens*, or a tree like cembro nuts (on the *Prinus Cembra*). What is the dose? Is it miscible with water, other oils, or with tinctures; in what is it soluble, etc., etc.?

Then look down the list of the formula, and select carbolic acid; how many of the dentists, or surgeons and physicians even, would reach the 100 mark in answering a fair, sensible list of questions—such as some that occur to me as I write: What is it? Whence derived? What are a few of the nine other common names for it? Is it benign or toxic? If the latter, what quantities and how does it act? Is it medicinally rubefacient, irritant, coagulant (on albumen), vesicant or cauterant? If it is a caustic, does it when applied to animal muscular fibres follow them longitudinally or pass directly through them, and thus through other tissues? How does phenylic (carbolic) acid, combine with camphor-gum to form "campho-phenique," which so high an authority as is Burton Lee Thorpe directs in italics to be used with cocain only from "original package"? How does it differ from creosote? When did it first become official?

Now I will not say that a dentist who could not reach the 100

mark concerning these two very common remedies can not intelligently use them; but it provokes a smile when such proclaim their ethics to forbid use of compounds the formulæ of which are withheld.

Results of careful, intelligent study of simples to be compounded, plainly and truthfully recorded, are of great value. Results obtained by clinical experience of such a student with those simples compounded in the best manner (and there is only one best way), if intelligently and truthfully recorded are of still greater value, even if the formula for the compound is withheld. While I cheerfully give the formula for *Gingivarium*, I earnestly urge a careful study of components and compound, especially by the younger members of the profession, for with the most careful research of both no two of them will be able to make the compound of equal quality except by the rarest accident. Every skilled pharmacist will confirm my statement.

Some may object to the number of the simples used, adopting the doctrine embodied in the Homeopathic students' college yell:

"Single remedies go, go!

Compound remedies no! no!

Simple remedies go! go! G—o—o!"

with a crescendo and explosive on the last word better recalled by college graduates than written out. I reply, we do not so argue at our tables while striving to get nourishment. One form of nutriment alone does not satisfy. I dare not abate a single ingredient. Without either one the compound would not be the antiseptic, anti-ferment, antisepsichyma, and antitoxæmia that it is. These "anti" terms are used with a careful study of their meaning. I commend as careful a study in the reading as I gave in their selection. Having published the formula, and having tested upon myself all the simples separately, and used the combined remedies as a compound for years, I violate no canon of ethics by its praise, nor do I guess as to its merits, its value to myself and to others.

A few words as to antiseptics. There is about them very much literature that is meaningless not only but misleading. What is antiseptic? Webster gives it, noun, "A substance which resists or corrects *putrefaction*." Dunglison, "Anti putred; opposed to *putrefaction*." What is putrefaction? Dunglison says of it: "Putrefaction fermentation. Decomposition experienced by animal sub-

stances when deprived of life." Dunglison Dictionary, twenty-first edition.

At best an antiseptic can be nothing more than an adjuvant, an aid in arresting or preventing decay of teeth, or in an arrest or cure of diseased gums or mouths. Indeed strict construction of language would dictate that antiseptics would be more appropriately used on pork hams than in pyorrhœal pockets.

But there are different antiseptics; and differing antiseptics have different properties. Some are germicidal; others are caustic or have caustic effects; they may be coagulants, stimulating in action, sedative, analgesic or irritating, and may have other effects guessed at and but little understood. The only pertinent questions after all are what medicines do. What have they done in *aid of nature*?

I have thus far discursively striven to draw your readers—the younger portion—into line of reasoning in control when I made the selections for *Gingivarium*. I will as briefly as possible give the names again of the components in their order, and define their several dominating influences as I view them, and make such suggestions as to treatment as will best guide your readers in a test trial. A fair trial is all I ask.

Oil of Cloves.—Lat. *clarus*, nail; literally spice nail. Pungently aromatic stimulant, analgesic, antiseptic. It tends to quiet pain, stimulate capillary activity and salivary secretion and flow.

Specific Cactus.—Grandiflorens. Of tropical nativity, charming fluorescence; its office is two-fold: 1st. to antagonize the toxic influence of cocain in idiosyncratic individuals; 2d, to influence regular functional performance of heart, nerve, and repair processes.

Specific Echafolta.—A clarified, decolorized, specifically concentrated preparation of specific echinacea—the latter a tincture of the echinacea purpurea, a plant growing on arid lands and tropical altitudes. The natives of those countries use the plant topically and internally for cure of poisons and venoms from bites of tarantula lycosa, rattlesnakes, cobra de capella, and stings of insects. Echafolta is a permanently clear, pale olive green extract of echinacea; has a pungent slightly greenweedy taste, lapsing into a tingling sensation, followed by analgesia, not very pronounced but considerably prolonged; taste and effect producing capillary stimulation and salivary outflow, and if you listen (?) an awakening arousing

of the entire fifth pair of nerves, periphery, vagus, gray tubercle of rolando, and multipolar cells close to the gray tubercle.

Physicians who are up to date and know its value prescribe it for all blood dyscrasias, tendencies to sepsis, gangrene, sloughing, phagedena, and putrid erysipelas, malignant carbuncle, cerebro-spinal meningitis and purulent salpingitis, to prevent formation of pus and pits in smallpox, in diphtheria and ulcerative tonsilitis. I have with it twice aborted pneumonia following depressing chills in my own case. I have treated over fifty cases of burn wounds simple and "second degree," all except one healing without scars. It is the only speedy and sure remedy known for the toxic effect of poison ivy (*rhus toxicodendron*), and bites of mosquito and *cimex lectularis*.

Carbolic acid, or phenilic alcohol, phenyl hydrate, is a substance so commonly used that I do not need to describe it. It is the basis of campho-phenique, phenol sodique, and a whole brood of other phenols wherewith to flood the market, levy tribute on dentists, the aggregate of which would, if computed and represented in pyramidal form, overtop those of the vulcanite and tooth-crown compounds combined. In itself, with proper diluents, it is probably the best antiseptic and germicide discovered. The review of my notes of it made years ago, when I formulated *Gingivarium*, has given me the keenest and most restful pleasure. I shall still use it for its antiseptic germicidal and analgesic properties, and for its aid wherever a stomachic is needed.

There remain but two of the ingredients of the formula to describe—cocain and glycerine. The latter is so well known that I shall only say that it is tri-atomic alcohol of fats. It is useful in the formula as a diluent and an excipient. We of this adulterant age should know of it, for we eat it in preserved fruits, drink it in wine, beer and milk. But as boy and girl-babies appear faster than old and young children die, we need not inveigh against this particular adulteration. None but the pure article should be used.

Cocain.—And now what can I say of this much praised and condemned salt, that has not been written and spoken over and over again in wearying iteration? What new coin of expression in its praise can I stamp out that with the educated professional shall pass current in encouragement of its daily safe use that I have not already spoken and written? What warning note can I sound that

shall strike the ear of ignorant and careless users, inducing them to study, and experiment, that shall enable them to bring out the good of it, and counter its evil? Its anæsthetic potency I pass over for two reasons; 1st, I can throw no new light upon it; 2d, the benefit derived from its use in the compound depends not alone nor mainly on its lethal effect, but on its antiphlogistic, stimulating, tonicity to capillary vessels and neuroblasts. That cocain skillfully used has a power to control inflammatory action and stimulate nerve force and capillary function, is as well proven to me as that its toxic influence will degrade a brainy man with stronger appetites than will, into a driveling idiotic wreck.

If these properties have been noted and described by teachers and writers, I have been unfortunate in overlooking them. So I can not quote "Authority" in support of my assertion. But I assure you and your readers that study and experiment such as I commend will bring ample proof.

I will now as briefly as possible describe some of the effects of the compound, and make suggestions for its use.

(To be continued.)

PROCEEDINGS OF SOCIETIES.

CHICAGO DENTAL SOCIETY.

The regular monthly meeting was held in Booth Hall, October 4, 1904, with the president, Dr. T. L. Gilmer, in the chair.

Discussion on the reports of the delegates to the Fourth International Dental Congress.

DR. L. OTTOFFY, Manila, P. I.:

I was very much interested in all the reports, especially that of Dr. Thompson, who spoke of cement fillings. I have seen cement fillings put in by Germans and Britains that are almost impossible to get out, even with the sharpest bur. I have seen the work of all nationalities and I have a higher regard for American dentistry now than I ever had when I lived here, especially of the gold fillings. They are the finest I have ever seen. There is something about these cement fillings that is peculiar. They do not wash away at the cervical margins, although they wash away elsewhere just like any other cement filling.

Dr. Ames in his report referred to the use of coagulants in root canals. When that had a run here I went into it with the rest, but I have changed my mind since then, and I am glad to see that investigations are bringing out the point that the use of coagulants in the root canal is not as important as was formerly thought.

Dr. Cook referred to one paper read by a gentleman from Duesseldorf, Germany. In regard to the quantity of lime that the system will take up, I think the principal point at issue should be how much lime can be assimilated, not how much can be digested or absorbed. I thought that part of it had been pretty well gone over.

DR. W. T. REEVES:

I want to congratulate the Society for receiving so good a report of the Congress, especially that of Dr. Thompson. I want to call attention particularly to the merits of what we call the Spaulding crown. It is known as a crown rather than as an overlay. It amounts to about the same thing as an inlay or a restoration, and in my opinion it is the coming crown for all the teeth. It is used a great deal by Dr. Spaulding in anterior teeth and also in cuspids and molars. I have seen a crown made on a cuspid root which was inserted in the end of a stick, and inch-thick pine boards were split with the crown without injuring it in the least.

I hope to have one made up as a dummy to exhibit at the odontographic clinic so that all who have not a good idea from the description can get a better one from seeing the crown made up.

DR. J. N. CROUSE:

There is one instrument that was not mentioned, namely, a sort of syringe to be used in forcing cocaine into the tubuli of the tooth. It seems to do the work, as the tooth is obtunded in a few minutes and you can operate for two or three hours without causing pain. The question arises, however, will the pulp live afterward? Perhaps this can be determined only by experimenting, so the instrument should be used cautiously at first.

The operation of cutting the enamel away from the tooth and putting porcelain in its place is not new. When it first came out I was not in favor of the practice and I have seen no reason since to change my opinion.

In speaking of Dr. Talbot's paper Dr. Cook neglected to mention that it received the second prize.

DR. R. J. CRUISE:

Dr. Ames in his report paid proper tribute to Dr. Buckley, who read the most valuable paper in the section of chemistry.

I was favored with Dr. Buckley's formula some months ago and I have used it in every case that offered. I believe that it is an invaluable remedy. I have used it in cases of putrescent pulp, the teeth being so sore that it was almost impossible to drill into the tooth in order to give the patient any relief. I placed in this remedy, sealed it in hermetically and sent the patients away with instructions to come back if they had any trouble, otherwise I would let it go for two or three days and generally have been able to drill freely into the teeth, and remove everything from the roots, and in cases where I have filled after one treatment I have had no bad results so far.

DR. G. W. COOK:

Some four or five years ago I began the use of tricresol in the treatment of putrescent pulps and found that it was somewhat irritating. I afterward combined the tricresol with formalin and have been treating teeth with it ever since. The formula now on the market known as Oxpara is due to me. I at that time was using the creosote and formalin and gelatin. If you soak gelatin in formalin it becomes very brittle. By pulverizing it you can pump the powder into the root canals, leave it there for some time and wash out the gelatin with alcohol.

The tricresol and formalin mixture is the most rational for treating many of these cases. I have felt somewhat timid about expounding this valuable theory because I was not positive as to just what the effect would be in certain cases. I believe the formula Dr. Buckley has given us will relieve the dentist from the necessity of going to the supply houses and purchasing a remedy of which he knows nothing, except in an empirical way.

DR. F. E. ROACH:

I want to endorse what has been said about Dr. Buckley's paper. I think we pay too little attention to the work that is being done by such men as Dr. Cook and Dr. Buckley. Dr. Buckley, no doubt, spent a great deal of time and energy on the elaboration of his formula and in determining its therapeutic effects, and it is a pity that these formulas get into the hands of some unscrupulous individuals who put them on the market under some fancy name, thus reaping

the benefit, while the men who do the work have only the honor to fall back on.

Dr. Thompson in his report referred to part of my clinic, the new porcelain. While this porcelain is almost too young to be brought to notice, I feel that it is going to be of value to us in that it will have a field of usefulness in prosthetic work and for large restorations in molar and bicuspid teeth. The material seems to have great strength, can be molded into any form and baked without metal base in bridge and plate work and without matrix in inlay work.

DR. W. V-B. AMES:

Outside of the use of proprietary remedies, there has been a great deal of empirical treatment of the conditions in root canals as well as other conditions, and in his paper Dr. Buckley simply gives us the action of the ingredients of his mixture on the different compounds, the result of the putrefaction of the pulp tissue, producing non-odorous and non-toxic compounds. This Society can not afford not to have heard an abstract of Dr. Buckley's paper and having the advantage of a few weeks or months over others.

As to the injection of cocaine and its effect on the pulp, that is a timely matter. I do not look in the same direction for possible bad results as some others. Formerly we introduced cocaine to an extent which was full of as harmful results as can possibly be the case with this method of forcible injection. I do not believe that we are in any greater danger of the death of the pulp from this method than when we used cataphoresis, and I have yet to see a pulp die from the use of the cataphoric process.

Where we fear bad results is in the extirpation of pulps. I am hearing of a lot of sore teeth due to the fact that in this process we do not so thoroughly extirpate the pulps as when we devitalize with arsenic.

DR. J. P. BUCKLEY:

I object to the use of cocain with pressure for desensitizing dentine, but not for the extirpation of the pulp. Because of the direction of the dentinal tubules it is impossible to desensitize the dentine unless you first anesthetize the coronal portion of the pulp, and that can not be done unless you anesthetize the entire pulp.

I do not believe we are justified in anesthetizing the pulp for the purpose of lessening pain, because, first, cocaine is a protoplasmic

poison, and when you force cocaine through the dentinal tubules into the pulp tissues you poison the protoplasm of the entire pulp and you are bound to have trouble later. Second, in the decomposition of the dentinal fibers ptomaines may be formed, and unless you are extremely careful to sterilize the cavity before forcing in the anesthetizing solution, these ptomaines will be forced through the dentinal tubules into the pulp, which may cause trouble. Third, if the tooth is completely desensitized, you may drill further than is really necessary and insert the filling so close to the pulp as to menace the life of this structure.

For these three reasons I object to the use of cocain for desensitizing the dentine. I use cocaine with pressure for the extirpation of the pulp, however, but I do not believe in forcing that anesthetizing solution, however sterile, down into the pulp tissue through the apices of the roots, and anesthetizing the tissue beyond. The solution should be forced no further than is absolutely necessary for the painless removal of the pulp. If you fill the root immediately, you are liable to force the root filling beyond the apex, causing a "lame" tooth after the effect of the anesthetic passes away.

Dr. Cook in reporting the section of pathology and bacteriology, was extremely modest. He did not mention his paper, of which Dr. Miller, of Germany, said that it was five years ahead of the dental profession.

DR. J. G. REID:

About two years ago a paper was read before the Odontographic Society on the painless removal of pulps by means of cocaine anesthesia. I protested against such practice and gave my reasons for doing so. And I have not seen any reason for changing my mind from that day to this.

I have seen the results in some cases where I tried the method, and I believe I am as careful in my work as any one. Bad abscesses have formed; not right away, but some time afterward. I have heard men say that they never had such results in their practice. If that is true, their patients did not come back to them, but went elsewhere. I have had some of them come to me. Many of you will have the same experience I had if you follow this practice.

There are a few pulps in certain localities that you may remove in their entirety, but I believe that when you attempt to fill the root canal, you do not fill it all. You will leave a space. There is

a weeping after that process, and it is impossible to dry the cavity thoroughly after the immediate extirpation of the pulp. Moisture gets into this and then you have trouble. I opposed the method two years ago, and do so still, except in a few single-rooted teeth.

DR. BUCKLEY:

I would like to ask Dr. Reid what vehicle he uses in making his solution of cocaine.

DR. REID:

Sterilized water.

DR. BUCKLEY:

I do not doubt that Dr. Reid is correct in his statements, but the trouble is not with the method. The trouble is due to his use of distilled water or sterilized water. You will notice that after such water has stood for two or three weeks it harbors a fungus growth, and then it is no longer sterile. You must add carbolic acid or trichresol, or some disinfectant, to keep it sterile, even if you are using an essential oil water. Use that for a vehicle for cocain, and have your cavity clean, removing all the ptomaines, and then you will not infect the peridental membrane. That, probably, was Dr. Reid's trouble

DR. REID:

I did not say anything about not being able to anesthetize the pulp. I did not dispute that. In fact, I said that some pulps can be extirpated by that method but they are few. Dr. Buckley, in spite of his wonderful skill and ability to remove pulps, can not do it any more than I can, and I believe I am as careful in my work as he is.

DR. JENKINS:

I wish to suggest to Dr. Reid that after using the cocain I always use sulphuric acid so as to destroy any part of the pulp I did not remove with the broach.

DR. BUCKLEY:

Dr. Reid misunderstood me. I meant to say that I could remove any pulp that I had anesthetized with cocain that I could remove had I used arsenic. In mesial roots of first molars are pulps I do not remove, but I can if I had anesthetized the pulps as readily as though I had used arsenic for devitalization.

DR. F. B. NOYES:

This question of pulp removal has a curious phase. One man said that the reason teeth were sore was that, owing to the anesthetization of the tissues, the root canal fillings are forced beyond the apex of the tooth. Another said that it is impossible to dry the root canal so as to have it ready for filling after immediate extirpation.

I believe both things occur. I saw a third molar from which the pulp had been removed by cocain and the roots filled, and it caused trouble. I found the root filling protruding beyond the ends of the canals of all the roots. And they were not large canals, either, and a very careful operator put in the fillings. I think we use too much cocain.

On the other hand, the root canals Dr. Reid referred to, from which, he says, nobody can remove the pulp when alive, are just as hard to get into after devitalization with arsenic, and it is just as hard to remove all the pulp tissue as after cocain anesthesia. If we must leave something in there I would rather leave a shred of living pulp than a piece of dead pulp. There will be less likelihood of trouble coming afterward. I do not believe that any of us can claim we fill every root canal to the end in every case, although we try to do so. It is no more difficult to clean out root canals and fill them after use of cocain than after the use of arsenic.

DR. A. E. MOREY:

Is it not the judgment of every one present that the method of root filling is a mechanical one, and that it makes very little difference how the pulp is killed? If the canal is dry and perfectly sterile and perfectly sealed the chances are very small for an inflammation to follow. But every man who devitalizes immediately and fills immediately feels he runs a risk in so doing.

DR. F. B. NOYES:

Dr. Morey mentioned one important point. Most men who use cocain for the removal of pulps fill the canals at the same sitting. That is a mistake. I never do that unless it is absolutely necessary, and then only under the most favorable circumstances. It is just as necessary to fill root at a second sitting after the use of cocain as after the use of arsenic, and for the same reasons. I would just as soon take out the pulp in one sitting after the use of cocain as after two weeks with the use of arsenic.

DR. C. N. THOMPSON:

I have never found a reason for immediate root filling. I think it is better to destroy the pulp and allow nature to set up a point of separation. Then when removing the pulp it will divide most easily at this point and come away clean.

The main objection to the immediate root filling after extirpation is that the pulp may not come away entire at the apex, and in putting in the filling the portion of the pulp that still remains in the canal, if dead, is pushed ahead of the filling, and, being dead, acts as an infective substance. If not devitalized the root filling stops as soon as it is reached, thus leaving the canal only partially filled.

DR. H. J. GOSLEE:

There are three points I would like to touch upon:

First.—Dr. Noyes hit the nail on the head with reference to the use of cocain or arsenic in the devitalization or extirpation of the pulp when he said that it did not matter how you secured the death of the pulp, but how thoroughly we fill the canal. And when he said he did not believe in immediate filling of the canal after removal of the pulp I agreed with him. Dr. Reid and all others who have had trouble will find that they will not have any if they fill the root canals at the second sitting.

Second.—With regard to the method advocated by Dr. Buckley: His formula, I believe, is practically the same as that of Oxpara, but he has given us a method by which we can successfully treat putrescent pulp canals. It is better than any other method I have seen used. I have used his method for five or six months, and I have never had any trouble after its use, nor have I ever made more than two applications of the medicine. Dr. Buckley suggested that I dilute the remedy so that the formalin should not be so strong, using three parts of tricresol and one of formalin. I used equal parts of formalin and tricresol, and after having used it extensively I told him I had no trouble, and I think my experience was largely instrumental in producing the formula he now advocates.

Dr. Reeves spoke of the Spaulding crown, and I agree with him. It is a modification of the jacket crown in that the matrix is taken out afterward and the shoulder is formed on the root to

which the crown is afterward adapted. It is a valuable modification of the primitive method. It has a sphere of usefulness, but it will never be a universally acceptable crown because the occlusion and alignment of the adjacent teeth preclude enough tooth structure to maintain absolute fixation.

DR. EDMUND NOYES:

It seems to me that the jacket crown must have a very limited range of usefulness. I can not imagine any reason for putting a crown on a tooth which is in such condition as not to require the removal of the pulp, except in very rare instances. Such teeth should usually be treated in some other way than by crowning. The proper places for them are the utterly disfigured and atrophied teeth which have no enamel upon the occlusal third or half. In such cases the jacket crown is applicable.

As to the cause of sore teeth after the use of cocain anesthesia for the removal of the pulp, Dr. Ottolengui, in a recent article, suggested that secondary hemorrhage and the formation of a small blood clot in the apical space might be a cause. It seems a plausible explanation. I have had a few cases myself in which I filled the root canal immediately, and the soreness following it was protracted and extreme. They have been among the sorest teeth I have had anything to do with. But I did not hesitate to assure the patients that no abscesses would form and that they would recover. And they did recover, but only after a long time, as much time as would be taken for the absorption of a blood clot.

I have not seen any abscesses follow the treatment of teeth by this method, and I will not hesitate to say that if abscesses do follow there has been either infection in the management of the pulp canal or infection from some nearby abscess, or there is a general septicemia. Abscesses can not form without infection of some sort.

My own plan, in addition to the ordinary care of sterilizing instruments, handling the cocain and removing the pulp, is to use 95 per cent carbolic acid as an assistant to the anesthesia at the extreme apical portion of the pulp. When the pulp has become so far anesthetized that I can get a brooch in with little or no sensation, I am apt to carry a minute thread of cotton, saturated with carbolic acid, to the very apex.

DR. W. V-B. AMES:

As to the effect of cocain on the pulp tissue, Dr. Buckley mentioned the introduction of ptomaines into the pulp tissue by the cocain. I am positive that the cocain introduced into the pulp tissue does not act as a poison and that it will not cause the death of the pulp. But if there is any danger at all it will come from the introduction of ptomaines.

Dr. Reid said that in round-rooted teeth the pulp can be extirpated to the very apex, but the apical space will give you trouble if you fill immediately. In the flat-rooted teeth there is a constriction about half way up the root canal. If you have that thoroughly devitalized, where is the separating of the pulp going to be? At just about that constriction, and you have more or less pulp left. That is bound to give you trouble.

Dr. Noyes says that it does not make much difference with what you devitalize. If you devitalize with arsenic and wait for the slough to take place, you can entangle the pulp and have all the fine filaments come away; whereas if you devitalize with cocain you tear these filaments off. That is the difference.

ODONTOGRAPHIC SOCIETY OF CHICAGO.

A regular meeting was held November 21, 1904, with the president, Dr. J. P. Buckley, in the chair.

Dr. Charles P. Pruyn presented an abstract of the papers read before the section on Oral Surgery of the Fourth International Dental Congress.

The new constitution and by-laws, presented at the September meeting by the reorganization committee, came up for passage. Before the new constitution and by-laws were voted on, speeches were made by Drs. W. H. G. Logan, William F. Whalen (Peoria), T. E. Powell and C. E. Bentley.

DISCUSSION.**DR. W. H. G. LOGAN:**

Mr. President—It is only important at this time for me to describe the details connected with the change outlined in the new constitution and by-laws. The change is simply this: Hereafter every member of this Society shall pay \$3 a year instead of \$1.

If the constitution and by-laws be adopted there is no alternative whereby a man can be a member of this Society and only pay \$1. The change increases his dues to \$3, and he either pays that or he is not a member. The other \$2 are to go to the State organization, and he becomes a member of the State Society. For the extra \$2 he receives the proceedings of the State organization, a bound volume, as well as his full benefit of being a member of this Society.

Another change is this: Supposing a man does not live in Cook County, but he is a member of the Odontographic Society; he naturally asks, will he be called upon to pay \$2 to this Society or to a society in some other county—for instance, Kane or Will County? If he is a member of a local society there, he will pay \$2 to that society, which makes him a member of the State Society and a member of this Society, but instead of being a regular member he will be an associate member and thereby will pay simply \$1. He pays only once. The only objection which would naturally be raised against this constitution and by-laws is that this is a young man's society, and that many of the men may feel they can not afford the increase in dues from \$1 to \$3. The only way to get at that is to determine whether we may lose a great number of our members, and in so doing to compare it with other professions that have practically adopted the same constitution and by-laws.

The State medical profession seven years ago took up this plan we are taking up tonight. Some fifteen, or perhaps ten, years ago a physician in the middle of the State, then president of the State Medical Society, wrote and read a very brief president's address, in which he outlined a procedure as to how he thought the medical profession of the State should be organized. I believe he received a vote of thanks for his labor, and the address was seemingly forgotten. About eight or ten years later another man came forward with what was said to be a new thought, but which was really an old thought that had been previously presented. This thought was accepted and carried out by the medical profession of the State, which resulted in its complete reorganization. Some six years ago it was adopted in the State organization of the medical profession, and whether we would lose temporarily or permanently members, we can only judge from the membership of the Chicago Medical Society at the time this Society adopted a new

constitution and by-laws. In 1897 the State Medical Society had a membership of 400; today it has a membership of 4,600. The Chicago Medical Society, in 1899, had a membership of 929; it now has a membership of 1,500. Therefore we need not fear that the adoption of this new constitution and by-laws will harm the profession or harm the local society if we are to judge from what we have seen occur in the history of the medical profession.

It is important to know how this movement was begun, by what society and through what society it was brought to the members of the profession. What society in the State really began the work and is really carrying on the burden of it? In April or May, before this Society, one of the youngest men of our membership presented this plan. He spoke along the line of professional organization and said that we did not have as good an organization of dentists in the State as we should have. The plan was favorably received by this Society, and it was recommended that we present the same idea before the State Society and see what the members thought of it. Therefore it is well to remember that the Odontographic Society of Chicago started this movement; that its youngest members took it up, and they are the men who are carrying it on. Whatever credit or harm comes from it we should lay at the door of this Society. Before I take my seat I want to say that my good friend, Dr. Arthur D. Black, is the one who brought the plan before the Society: he has done the most work, and to him belongs most of the credit.

DR. WILLIAM F. WILALEN (Peoria):

Mr. President, Members of the Odontographic Society—It gives me great pleasure to be here. I have heard enough already to amply repay me for my long trip from Peoria to be here with you this evening.

As has been our custom we have made reports to the chairman of the State Committee on Reorganization from time to time of the progress made in our district, and after our meeting of November 1st, I sent in a favorable report, and in that I expressed a desire to be present at the Odontographic Society meeting on reorganization, with the hope of bringing back some new ideas which I could put to good use in rounding up the Mavericks down in the Peoria district, and Dr. Black said he would be glad to have me

come, and tell you how "we did it" in Peoria, so that tonight I shall confine myself to explaining to you the plans we followed in effecting reorganization in our district. Up to three years ago they never had a dental society that had lived for more than a year or two in the city. They quarreled among themselves, broke up and were out. Three years ago we got down to business, and as a result we succeeded in getting about twenty or twenty-two dentists into the organization, and we have kept them in ever since, so that when the State Society decided to reorganize the dentists of the State and appointed a committee, we were in good shape to get down to business. Dr. Black with his confreres on the committee appointed a local committee in Peoria to reorganize the dentists in some six counties in our section, and furnished a list of those that they considered eligible in that district. In the list there were some sixty-six. After the appointment of the committee we conferred with the officers of the Peoria City Society, and caused a meeting to be called for the purpose of considering a constitution and by-laws and voting as to whether we would become a component society of the State organization. At that meeting there were some sixteen or eighteen present, and all evinced enthusiasm to take up the work. Some were heartily in favor of it. To avoid any conflict of duties they voted to appoint the subcommittee of the State committee as their committee, to revise and amend the constitution and by-laws to suit the purposes of the local society, and called a meeting one month from that date. The committee made a report, and also furnished a list of names the following meeting for censorship, and as a result of the reading of those names we cut the list furnished by the State committee down to sixty-two. Dr. Black in his many notices to the members of our district society urged them to become members of the State society, and we received fifty-two acceptances out of sixty-two. At the meeting, at which we adopted a constitution and by-laws, our society voted unanimously to utilize what funds we had on hand toward giving a complimentary banquet and entertainment to all dentists of our district, and we sent them a cordial invitation to be present at our expense. The thought occurred to us at that time that we might invite some of the traveling men who visit our city representing the various dental houses. We did so, and they seemed to fall in with the idea enthu-

siastically, and said they would do everything they could to make the meeting a success. Seven out of eight of the traveling men, who make our territory, accepted, and with their letters and Dr. Black's letters and our own, we made nine appeals to every man in our district. We sent out to the sixty-two men in our district nine letters urging them to be present. As a result of the invitation, to which was attached a return addressed postal card, we received forty-four acceptances, or rather, forty-one positive acceptances, so that at the banquet we had forty-one dentists and seven traveling men. We had an enthusiastic meeting, and all men from outside of the city spoke very highly of it. They expressed themselves as being glad they came, and said they would certainly be with us. Aside from the forty-four who accepted our invitation there were eight others who signified their intention of becoming members, making a total of fifty-two upon whom we can with reasonable certainty count as members, possibly more, so that we think if that percentage can be kept up throughout the entire State it will certainly augur well for reorganization. Our percentage would run about 85 per cent. I understand that we have about 3,000 dentists in this State, and if we can average that percentage throughout other portions of the State we will have a very large attendance at the Moline meeting next year. In addition to that, I wish to say that the same feeling seemed to be general throughout the other districts of the State. Heretofore Chicago has practically had the major portion of membership in the State Society, and I wish to serve warning now, gentlemen, that you must get about and be active or the State is going to pass you in the race. There are 2,000 dentists throughout the State to draw from, and unless Chicago asks every dentist to constitute himself a committee of one to urge reorganization, we will carry away the honors; we will have the honor of having the major portion of the State Society instead of the city of Chicago.

I feel this way about it: From my work on the committee in our district I find there is too much left for the committee to do; that is, members sit down with their arms folded and let the committee go ahead and work. In our district we are all working together, and every man of every society in cities and throughout the State should constitute himself a self-appointed committee of

one to work among his immediate friends, and induce them in every honorable way to become members of the Illinois State Dental Society, and if this is done, we will have a meeting next year at Moline which will surprise the most optimistic.

DR. T. E. POWELL:

Mr. President and Gentlemen—I was requested to come before the Society tonight and take the opposing side. I do not know why, unless I am usually in the minority on almost every question that comes up. But there is one thing I might get some comfort from and that is, if I am in the minority, I belong to the “unterrified minority.”

However, gentlemen, I wish to say in the beginning, I believe in the consolidation of all societies in the State. “In union there is strength,” and the dental fraternities need more strength than they have, in order to get, in this State, the legislation that they need, to bring them before the public in the proper light; and to obtain the influence to which they are entitled. You know, doubtless many of you, that down in New York State it has been decided that a dentist can not be admitted into polite society simply because a man who *cleans teeth* is not considered a gentleman. I do not want all of you who are in society immediately to refuse to clean the teeth of your patients, because if you do, there will be a bad state of affairs in the oral cavities of the society people of Chicago.

But, seriously, I do see some objection to a change in the constitution and by-laws, such as is contemplated here. Of course, the object of a society is to bring to the members of that society and to the community of dentists all the good that can be brought to them from a professional standpoint. We should have in this society as members not only the better dentists of the community, but the poorer dentists of the community. We should have not only the best talent of the dental profession in our societies, but we should have the weaker members of the dental profession in them, men who are weak not only professionally, but financially, and a great many of the dentists at the present time find it difficult, as I understand from the report of the secretary of the Society, to pay even one dollar a year dues. Of course, one dollar a year is a small amount of money for those of us who are opulent, but to many a man it means a great deal, and three dollars a year would floor some men

entirely. Now, gentlemen, I think it would be a serious drawback to this Society to raise its dues from one dollar to three dollars a year. There are a great many men in this community whose ethical ideas are not highly developed, whose professional spirit is not highly developed, and who are, to say the least, careless in their attendance at the meetings of the Society, but more careless as to the payment of their dues, so that when we raise the dues of this Society to three dollars a year, you will find a great many men will drop out—at least, I suppose they will. Many of them will. If that should be the case the usefulness of the Society will be crippled to that extent. If twenty-five men, who have been regular attendants of this Society, should drop out the usefulness of the Society would be crippled. When we add to this reason for not adopting this constitution the further reason that an attendance upon the meetings of the State Society entails an expense of from fifteen to twenty, or twenty-five dollars, and add that to the three dollars per year for belonging to the local and State dental society, we clearly see what a great expense there is for the average man. How many members of the Odontographic Society will pay three dollars a year, and the additional expense of fifteen or twenty-five dollars a year to attend the meetings of the State Society? If they are unwilling to pay twenty or twenty-five dollars for the privilege of attending the meetings of the State Society, will they care to belong to the Society at all? In other words, will they be willing to pay three dollars a year to become a member of the Odontographic Society?

There is another objection I see we might raise, or a difficulty we might encounter, and that is this: There are a number of local dental societies in the city of Chicago, and one in Englewood, which I think of in particular, with a membership of sixty. A great many of the members of the Englewood Dental Society are also members of the Odontographic Society. They pay a dollar a year as dues to the Englewood Society, and if they have to pay three dollars a year dues to the Odontographic Society it will make four dollars for an Englewood member who wants to belong to the Odontographic and State Societies. My opinion is that we will have to make some provision for auxiliary societies of the Odontographic Society if this change goes through; or else we will have to face the probab-

ity of another local society being organized on the general popular plan of the Odontographic Society, which will be in competition with this Society. The success of this Society in part has been due to the small dues the members have had to pay. And another reason, of course, is due to the spirit of enterprise possessed by the members. But I want to say to you, gentlemen, the dues have a great deal more to do with the large membership of this Society than anything else. Many men will pay a dollar for membership who will not pay three dollars. I think most of you will acknowledge that to be true of some of the older societies, which have for their dues a larger amount. and these older societies have a membership composed of eminent men, and the papers are just as good as those presented by the members of the Odontographic Society, but their membership is small.

Simply as an advocate, partially against my will, I have thrown out these possible objections to the adoption of the constitution and by-laws in the few words I have uttered. I believe I have performed my duty as an advocate, and if you will permit me, I will sit down and try to collect my fee.

DR. C. E. BENTLEY:

Dr. Powell has made as good an argument as can be for the other side. I do not know how earnest he was. I only know he was zealous. I am glad he brought out what might be considered some of the objections to the adoption of this constitution and by-laws, because some of the points are a key to the problem we have to contend with. I will try to answer some of the things he has said. First, he based his argument on the dues of \$1 a year. To the younger men coming into the dental profession that is a consideration, we must admit. To those of us who are older in the profession it ought not to be a consideration. There are more vital points to be considered in the conception of this organization than the mere fact of \$1 or the mere fact of \$3 a year. The advantages that can accrue to the body of the profession by reason of this organization plan are numerous, and if a man can afford to become a member, even pay \$3, and can not pay \$25 or \$30 to go down into the interior of the State to attend a meeting of the State Society, it is his duty to pay those \$3 a year, whether he can afford to go to the State Society meeting or not.

A second objection instanced by Dr. Powell was with reference to the Englewood Dental Society, that there would be an additional expense. I do not understand this to be the case, and if I am wrong I hope to be corrected. The members of the Englewood Society, as I understand it, would become associate members and would not be charged the extra fee, provided they wanted to belong to the Odontographic Society. It seems to me these objections should not stand in the way, that these disadvantages should not weigh against the advantages.

What are some of the advantages of this proposition? If you ask a man to invest 5 cents in anything, you must give him a reason for that investment. It is a *quid pro quo* arrangement. You must give him some return. What return have we to offer him to invest or to pay \$3 to become a member of both the State and Odontographic Societies? He becomes a member of both of these societies by paying his \$3.

Last year, when we desired to perfect some competent and efficient legislation, and sent our emissaries to the Legislature and asked and pledged them in committee as individuals to carry through an act that had been prepared for them, we were confronted with the question, What percentage of the profession does the State Society represent? We were compelled to answer that it represented only a small percentage. Thirteen per cent of the members or dentists of the State are members of the State Society. Then we were asked, Do you really ask us to legislate for the remaining per cent when you only represent 13 per cent? And it was one of the most telling blows we had to withstand. There is a great advantage to be derived from organizing the unorganized elements in the State of Illinois, because when we get banded together as one body, presenting a solid phalanx, we can secure legislation that will be of benefit to our profession, and then we can answer that we not only represent 13 per cent, but 60 or 75 per cent of the dentists of the State. When we have done that, gentlemen, we have made an advance and a reasonable demand.

Let me mention another advantage. There is no question about it, gentlemen, that the advantage of contact is one of the most civilizing influences in the world. Charles Lamb said to Ben Jonson, when they were walking along the street one day and

Ben Jonson bowed to a man: "Why did you bow to that man? I hate him." Ben Jonson replied, "You do not know that man." Charles Lamb said, "And possibly that is the reason I hate him." So it is at these great conclaves that meet in the interior of the State: we have vital and splendid opportunities to touch men. This question of contact has a decided advantage, and I do not know of anything, even professional advancement, that is of any greater advantage than this social contact, the finding out of what is in the real man, the man of whom you have read but never touched. There is a great advantage in coming in close touch with such men and talking with them at close range. It is an advantage that you can not calculate in dollars and cents. There should be an organized movement in this great body of men which can move along logically, successfully and persistently. I claim that this is another advantage.

And what shall I say of the glorious old State Society from which so many of us have gained inspiration and to which a great many of us owe so much if we amount to anything in our profession? The Illinois State Dental Society is the greatest State Society in the world. There is no gainsaying that fact, and if you will read and familiarize yourselves with the literature of that Society you will be impressed with the result and say that here is a society or a body of men with whose traditions I want to become familiar.

What has this Society done outside of its small coterie? I want to mention some of the appropriations it has made. In 1897 \$300 were appropriated for the Dental Protective Association for the protection of the dentists of the State and of the United States. In 1899 \$200 were appropriated for the State Board in order to better the legislation of this State. In 1902 \$1,500 were donated to the prosecuting committee for the purpose of prosecuting illegal practitioners and others who were violating State laws. One hundred dollars in the same year were sent to the Galveston dentists who were suffering from a calamity there. In 1903 \$1,200 were again sent to the committee for the prosecution of illegal practitioners, and \$100 in the same year were given toward the erection of the Cushing monument—a monument to the Nestor of dentistry in Illinois, that patron saint whom we all loved while alive and to whose memory we now pay this tribute. Nearly \$3,000 have been

spent by the State Society for the prosecution of illegal practitioners in the State, for the enforcement of an act which will enable you and me to better practice our profession without being hounded by these parasites. Those are some of the advantages that should appeal to you in contradistinction to some of the disadvantages that were mentioned by Dr. Powell as to why this organization plan should go through.

At the close of Dr. Bentley's remarks, Dr. Logan moved the adoption of the new constitution and by-laws, which was seconded and unanimously carried.

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EDITORIAL.

THE REORGANIZATION OF THE ILLINOIS STATE DENTAL SOCIETY.

At the meeting of the Illinois State Dental Society last May resolutions were passed tending to the reorganization of the Society along lines which promise to largely increase the membership. The plan is to have local societies organized all over the State, known as component societies, and membership in the State Society to come only through these societies. The committee appointed to carry on the work of reorganization has put a great deal of energy into the effort, and has already accomplished some wonderful results. Twenty-five societies have been organized or reorganized throughout the State, and at present the prospective membership in the State Society at its next meeting, in May, 1905, will be about 1,000. This will be a remarkable showing, and the same kind of effort carried on through the following year will greatly add to this number.

From all parts of the State wherever the plan has been introduced it has met with the hearty support of the profession, and it will not be long before the dentists of Illinois will be organized in a manner which will lend considerable force to any reform they may undertake. Let every reputable practitioner in the State affiliate himself with his local society, and through that let him become actively identified with the State Society. It is only through this kind of organization that the greatest good can be accomplished to the greatest number, and we are hopeful to set a pace in Illinois for other States to follow till the profession has some kind of a representative organization.

The reorganization committee, and particularly its chairman,

Dr. Arthur D. Black, must be given great credit for unceasing effort in furthering this plan, and it now remains for the profession of the State to rally around the movement and make it, beyond peradventure, an assured and permanent success.

THE EDITOR'S DESK.

AN INTERESTING VOLUME.

Through the kindness of Dr. James McManus, of Hartford, Conn., I have received a small volume which has proved of very great interest to me. It is entitled "An Essay on Teeth, Comprising a Brief Description of Their Formation, Diseases and Proper Treatment." The author is no less than Dr. Horace Wells, the discoverer of nitrous oxide gas as an anesthetic, and the date of the publication is 1838. I must confess that with all I had heard of Dr. Wells I was not aware that he had written such a book, and I am deeply grateful to Dr. McManus for giving me the pleasure of reading it.

I have been greatly struck by many things in this little volume of seventy pages, for, aside from the crudities and the primitive theories which we might naturally expect in a book written at that time, there are many ideas which, though quaintly put, are yet indicative of the deep insight of the author. His chapter on "Cleansing the Teeth" might be read with profit today. He starts the chapter in this way: "There still exists a prejudice against the use of the brush for the cleansing of the teeth. It is considered by many not only superfluous labor, but worse than useless, from the supposition that so much friction on the enamel must be injurious to it. A greater mistake could not exist. We might as well talk of wearing out any other part of the system by frequent cleansing."

And yet the chief impression made on the mind, after a careful reading of the entire book—remembering that it was written by one of the foremost men of the profession of that day—is the very great advance in dental thought along histological and pathological lines since this book was written. If the books we are turning out today sound as crude to the profession sixty-seven years hence, then it means a wonderful development for dentistry in that time. And

that this advance will take place is almost certain. We are just seemingly getting a ray of light here and there, and the younger men in the profession have the problem presented to them of taking up the work where the pioneers have left off and of carrying the science and art of dentistry to a higher and still higher state of perfection. I never read anything from the pens of these old pioneers without a sense of reverence for their effort. They had very little in the way of literature to stimulate them, and their work was naturally more or less individualized. That they wrought as well as they did is the marvel, and we of the latter day owe to them our humble meed of homage. Let us take off our hats whenever the names of the pioneers are mentioned.

A THEORY DEMONSTRATED.

A few months ago I had an article in this department on non-resistance, which brought me some comments from my readers, one of which was to the effect that while the theory was very fine—as a theory—yet the carrying out of such a theory was an altogether impractical matter. Well, I little thought at the time that I should soon have such an excellent opportunity of demonstrating my theory as was presented to me one evening just before Christmas. It is a great satisfaction to be able to prove one's self a logical practitioner as well as a preacher. I was walking along the street about 7 p. m., wondering if I had missed any one in selecting my Christmas presents, when I suddenly found I had. I was requested to contribute a present to a perfect stranger, and the request was accompanied by such a persuasive argument that I was immediately impressed by its force. The argument was about a foot long—at least it looked that long—and the part presented to me sparkled in the gaslight. The argument had a hole in the end I was looking at, and it was about on a level with my right eyelid. I at first thought I would go home and consult my family before giving this stranger a present, and started to run, but evidently fate frowned on such an exhibition of niggardliness so near Christmas, and I slipped on the walk and came nearly leaving the impression of a frightened dentist in the snow. By the time I recovered my equilibrium the stranger was presenting his argument a little nearer my right eye than ever

and was making some pointed remarks about "putting a plug" in me. He evidently knew my profession and wanted to impress me by the use of technical terms.

Well, it was just at this stage that I demonstrated so beautifully my theory. Talk about non-resistance! I will not say that I acted the part I did simply to prove my theory, so recently published, and yet it is some satisfaction to know that the event proved the soundness of my previous reasoning. I gave him the money he asked for, though I am afraid it was not as much as he wanted. In any event he was gentleman enough not to look a gift horse in the mouth, for he never stopped to count it. He may be running yet for all I know. I hope he is.

DOMESTIC CORRESPONDENCE.

THE GUMS FIRST.

TO THE EDITOR OF THE DENTAL REVIEW:

In a cartoon in the *New York Evening Mail* a lady is pictured as asking a little boy if his baby sister has got all her teeth yet. The boy answers: "I think she's got 'em, but dey ain't hatched yet." This statement of the boy was significant. Yes, *the teeth are in there, but not hatched*. This gives us the idea that the gums are the nest from which they are to be hatched. Now, for the aid of incubation. In the May number of THE DENTAL REVIEW our attention was fixed upon some remarks by Dr. Harlan relative to the proper popular teaching to be put before the public. In speaking of both, the gums and teeth, he queries whether "might it not be the gums *first* and then the teeth?"

Since reading the very forcible article in the *International* some two years ago by Dr. Smith, of Philadelphia, in which he so emphatically called attention to the great importance of "root development," our mind has been much impressed by it. He made a prophecy that it would be the cure for the irregular and defective conditions so prevalent. So impressed are we upon this outlook that were we to commence practice today with what we already have proved, and what we see in the horizon, we would start out on the basis of what we will term a *nursery practice* and establish our

confidence with the babies, their mothers and the nurses, and jointly bring about fruit that would remain.

Not a few times has the fever got on us that we would do it yet. We are aware that at 73 we would be looked upon as a little doubtful, yet we know of one that became a master of languages at 80.

Prenatal influences operate upon the beginnings of tooth formation. They are, in a measure, too obscure to attempt a detail, nor would they much facilitate our work in hand. *Stimulation* is the word that is to begin nursery practice.

An old-time usage is to "rub the baby's gums." The fact that so many babies are artificially reared emphasizes to our thought that manifold retrograde conditions could be easily traced back to this source. Massage is so much in vogue for various external ailments and its benefits are made so apparent that we can easily say "yes" to massage for the gums from start to finish. All mastication assures it, more or less, in the maturer progress of the tooth development. We shall watch hopefully the development of Dr. Smith's confirmed views along those lines. We are reminded of a saying in our writings often, what will it profit to do so much to save the crown of a tooth and ultimately lose the socket?

G. ALDEN MILLS.

NEW YORK LETTER.

The annual meeting of the Institute of Stomatology was held on Tuesday, December 6th, at its usual place of meeting, the "Chelsea," in West Twenty-third street, Manhattan. Heretofore this meeting has been held in the evening and as an "annual"—reports of officers, election, etc.—there was no opportunity for anything else. Consequently, the associate member got nothing out of the December meeting. This year, however, by making a change in the constitution, the society was enabled to hold its business meeting in the afternoon and a regular meeting, with essayists, etc., in the evening.

At the business meeting very satisfactory reports concerning the general health and well-being of the "Institute" were made by the officers.

The financial condition and the list of membership were especially gratifying. The election of officers resulted as follows:

President, Dr. Charles Otis Kimball; vice-president, Dr. Sebert E. Davenport; treasurer, Dr. J. Morgan Howe; recording secretary, Dr. Herbert L. Wheeler; corresponding secretary, Dr. James Buckley Locherty; curator, Dr. Stuart H. McNaughton.

New member of executive committee to take place vacated by Dr. Davenport, Dr. E. A. Bogue. Executive committee for ensuing year composed as follows: Dr. E. A. Bogue, Dr. Charles F. Allan, Dr. F. Milton Smith, chairman.

In the evening at the usual hour—6:30—quite a large number sat down to a regular dinner at the “Chelsea,” after which the meeting was held with the new president, Dr. Kimball, in the chair.

The essayist of the evening was Dr. Lee Maidment Hurd, of New York City, who presented a paper on “The Radical Treatment of the Maxillary Antrum.” He first described common, every-day methods of treating troubles of the antrum, illustrating his remarks with a couple of specimens of the antrum and adjacent bony structure. When ordinary methods failed to give relief, he resorted to a heroic method, which amounts to an entire obliteration of the antrum as such. In some cases cutting through the canine fossa—thoroughly cleansing cavity of antrum—even to the extent of breaking down the walls of the nasal cavity and making it one with the cavity of the antrum. He presented several patients, for whom similar operations had been recently performed.

Dr. T. Passmore Berens, of New York, opened the discussion and was followed by Prof. Robert H. W. Dawbarn, of New York. As both of these gentlemen and the essayist are physicians, the subject was discussed more from a medical than a dental standpoint. Dr. Berens emphasized Dr. Hurd’s statements and then described some special cases in his own practice.

Dr. Dawbarn had no criticism to offer. He said that trouble and stoppage of the frontal sinus was more frequently the cause of antrum trouble than had been supposed. After some remarks by Drs. F. Milton Smith and Fossume, the essayist closed the discussion, saying specially that this radical operation was indicated for cases *not* curable elsewhere.

Dr. J. W. Canaday, of Albany, then read a paper on his idea of a dental society as a suggestion for a dental club. He made much of the effect on young men—especially recent graduates—of associa-

tion with older practitioners. It was his idea that a dental club should be very informal, with as few officers as possible. He thought that frequent meetings of such an informal club would make the attendance at the regular meetings of the more formal and pretentious society larger. Altogether, it was a strong plea for association and the development of brotherly feeling, one for the other.

Drs. J. B. Locherty and Charles O. Kimball (the newly elected president) warmly commended Dr. Canaday.



At the New York Odontological Society's annual business meeting on Tuesday evening, December 19th, the old board of officers were re-elected with the exception of the editor: Dr. John I. Hart, president; Dr. F. T. Van Woert, vice-president; Dr. F. C. Walker, treasurer; Dr. W. D. Tracey, corresponding secretary; Dr. W. B. Dills, recording secretary; Dr. Dunning, editor.

THE FIRST DISTRICT DENTAL SOCIETY OF NEW YORK.

The thirty-sixth annual or anniversary of this, the "Old Original," was celebrated by a two days' clinic, exhibit and evening meetings on December 12th and 13th, the clinics and exhibits being given in the Grand Central Palace, Lexington avenue and Forty-third street, and the evening meetings in the large hall of the Academy of Medicine, 17 West Forty-third street.

The exhibits were, as usual, of a varied nature, especial interest centering around tables where porcelain inlay work was being presented.

The clinics numbered thirty and were very good and exceedingly well attended. The first day was stormy and disagreeable, but the rooms were crowded all the time.

The essayist for the first evening was that old warhorse of the West, Dr. G. V. Black, on his usual subject, "Extension for Prevention." I think the East loves him almost as much as you Middle Westerners.

After reading a brief paper, in which he maintained his position as emphatically as possible, he treated the audience, which filled the room to overflowing, with a long and elaborate series of pictures which exemplified his ideas in every detail. It was a very late hour when the last one was shown and the discussion opened.

Some of Dr. Black's terse remarks were: Places where real extension for prevention are necessary are few indeed. Do not make an operation (in gold) unless you can make a perfect one. Beginning of decay always has a whitened area. Never break down the nervous system of a child, nor his courage by forced operation.

Dr. Black's slides were arranged and shown in groups. Most of them were true photographs, but some were wash drawings.

Dr. Black exemplified more than ever that he is far from being an extremist.

The discussion was opened by Dr. R. H. Hofheinz. He said if extension for prevention had done nothing else than to cause a study of environment it would have done much; is not convinced that it is necessary to extend to all angles in incisors. He referred to the white spots as chemico-physical disintegration working from within out. Dr. Black, he believes, has treated the subject particularly from a physical standpoint.

What have we learned? Does a grand fact become smaller by repetition? Dr. Black has shown us that a profession like ours requires more than mechanical function.

Dr. E. K. Wedelstaedt, of St. Paul, said that it was the happiest moment of his life to be in New York with one of the deepest scientific thinkers of the present age.

Dr. Ottolengui, of New York, thanked Dr. Black for putting his theories where they belong.

Dr. Black, in closing the discussion, referred to the remark of Dr. Hofheinz. He said we have no such thing as physico-chemical disintegration. It is all bacteriological. The microscopic plaque is the cause of the white spot on a tooth. Plaques can not be dissolved by alcohol, water, ether or heat. They cover the surface of a tooth and act as a dialyzer.

It has occurred to your correspondent of what value, then, are mouth washes and dentifrices in general whose chief virtue depends upon their solvent properties?

The evening of the second day was given over to Dr. E. K. Wedelstaedt, of St. Paul, Minn., who, it was supposed, would read a paper on "The Packing of Gold in Proximo-occlusal Cavities in Molars and Bicuspids." Instead he lectured on his subject.

He had a large molar model, indicating a typical wide-open

cavity, and some balls of brown putty, with which he demonstrated how to start a gold filling in the typical parallel wall, step cavity, by packing the first piece in anchor groove placed at each gingival angle, and then either using small pieces of soft cylinders and laminating, or using the two-cylinder or three-cylinder (soft) method for covering the gingival margin and angle, continuing until one-third of the cavity is filled, then using cohesive gold.

He used a new phrase—cavo-surface-angle—so often that Dr. Ottolengui, although an editor, was evidently puzzled, so he interrupted Dr. Wedelstaedt to ask what was meant by the term. The doctor explained that he meant all the margins of the cavity.

The lecture was not very long. Dr. G. V. Black, of Chicago, had been announced to open the discussion. His remarks pertained chiefly to systematizing and the matter of formulating our ideas.

Dr. Ottolengui, of New York, was called upon to speak to the subject. He threw the first hot shot when he remarked that he never met a family who had a hyphenated name that did not have a mysterious past. What are words for? Cavo-surface-angle does irritate a little. Probably his most terse remark, speaking directly to Dr. Wedelstaedt's subject, was that "it is the man and not the instrument that fills the cavity."

Dr. B. Holly Smith, of Baltimore had to say that there were some martyrs not mentioned by Fox. Dr. Wedelstaedt's name should be in that book.

Dr. Smith believes in the use of non-cohesive gold and would not see it derided. He, too, juggled with the cavo-surface-angle phrase. "Wedelstaedt should have brought the matter of, what was it?—cable slot—before the N. D. A. if he has any thought of having it accepted." And "cable slot" was taken up by the other speakers of the evening.

Dr. S. G. Perry, of New York, said he admired the Royal W. Varney style of cavity preparation and straight instruments. Unfortunately, Dr. Varney was a very quiet, retiring man, who never wrote for publication but once, and that was very short.

I forgot to say that Dr. Wedelstaedt's cavity preparation represented the gingivo-buccal and lingual angles as quite sharp. Dr. Perry criticised that point in particular, saying that his extreme method would be to cut out well, but with a curve at these angles, instead of such pronounced right angles.

His practice is to keep fillings as small as possible. He knows that he must work harder to save teeth, but has too much reverence for tooth structure to cut it away. He ventures the prediction that the profession will come back to soft forms of gold, because they are best for tooth preservation.

Dr. R. H. Hofheinz, of Rochester, spoke at some length and was followed by Dr. John I. Hart.

Dr. M. L. Rhein said that, personally, he took serious exception to discussing a paper presented as was Dr. Wedelstaedt's, meaning, as has already been explained, that there were no tangible remarks to discuss.

When the meeting adjourned, large folding doors were thrown open to a connecting room, where was spread a bounteous collation. The fraternal spirit became rife and the two days' meetings, clinics, et al., a thing of the past.

Eleven o'clock breakfasts are not very common functions, and I am afraid if they were they would not all of them be as popular as the one tendered to Dr. G. V. Black by the First District Dental Society on Tuesday, December 13th. It was a special feature in connection with the two days' meeting of that society. Dr. Black had been the essayist at the evening meeting the day before and had been announced as a clinician to demonstrate the use of a new testing instrument some time on Tuesday, which meant a very full day for one in his state of health.

There were eighty or more assembled at the New Hotel Astor, at Broadway and Forty-fifth street, at the appointed hour to do honor to the guest. Dr. Black did not arrive till after the noon hour. He was greeted with the song, "For He's a Jolly Good Fellow."

Dr. Hatch, president of the society, occupied the center of the chief table, but Dr. R. Ottolengui, himself a guest of the society, had been chosen to act as toastmaster and he did it well. His introduction of the several speakers was pleasing, refined, mirth provoking, yet dignified. His introductions were interspersed with a story or witticisms apropos, which tended, among other delectables and beverages, to keep everybody in good spirits.

Dr. Ottolengui introduced Dr. Black in laudable terms and, as a finale to some eulogistic paraphrasing, moved that he be elected Dean of the Dental Profession. Everybody in the room signified their approval.

Dr. Black's toast was, "Is Dentistry an Art or a Science?" His speech was quite lengthy and he dealt particularly with the science of learning or of knowledge and of science and art. He said: "He who neglects the science on which dental art is based neglects much." "There is no proper dividing line between science and art."

Dr. Ottolengui, in his introduction of the next speaker, who, by the way, is another of your Middle West lights, led us on through the "Spirit of Carmo." He said he believed in the theory of reincarnation, that at one time in the distant past he was his knightship—Don Quixote—and at that time his chief occupation consisted in fighting windmills.

You may have guessed that Dr. E. K. Wedelstaedt was the next speaker, and he was to respond to the toast, "Windmills I Have Met."

He did not have very much to say, confessing at the outset that Dr. Ottolengui had taken the wind out of his sails.

Dr. Ottolengui, in some very serial fashion, succeeded in weaving Christmas Holly about our popular friend, Smith of Baltimore.

Dr. B. Holly Smith was given the text, "When Dentistry Was in Flower." He led off in his usual witty vein by telling that it was his custom to practice from nine in the morning until three in the afternoon, breakfasting, of course, quite early. "This is the first time that I have had an eleven o'clock breakfast. Now, when I go home, it is more than likely I will continue to have eleven o'clock breakfasts and quit at three. Then dentistry *will* be in flower."

Dr. Smith spoke very feelingly of Dr. Black, a few of which remarks were: "We ought to be proud to entertain this distinguished master."

Somebody said at the meeting last night, "Suppose he had been a medical man, think of what he might have done." God alone knows. We do know he is a dentist and what he has done for us.

Prof. J. Bond Littig followed Dr. Smith. He made one of the most poetical and beautiful speeches it has ever been our pleasure to listen to from him. His toast was "The Bond Between the Old and the New." He portrayed the dawn of day, the rising and glorifying sun, then at its zenith, and finally the setting sun in the West. Black is our Western son.

Dr. R. H. Hofheinz, of Rochester, was given the toast, "Opportunities of the Young Man," which he handled quite deftly. He

called to mind a remark of Dr. French, who said that he had no regrets for those things he had done, but for what he had not done. He referred to the difficulty of acquiring education years ago and to the generalization of education today.

"Women in Dentistry" was the theme selected for Dr. S. H. Guilford, of Philadelphia, to toast, and he spoke very highly of them as students, saying that they were more earnest than men generally, probably because they had fewer "habits." They are guided by ambition and higher impulses. When it came to the final examinations they generally stood higher than the men.

Dr. James McManus, of Hartford, read a nice theme on "Giants of the Olden Days," in which he brought in the names of many of our old precursors from Fouchard up.

Dr. H. W. Gillett, of New York, was assigned the toast of "Our Guests." In the course of his remarks he asked: "Did any one ever hear or know of Dr. Black uttering an unkind thing?" "Are we scientists? How many of us?"

He, too, seemed to feel solicitous for Dr. Black's future, saying that "we should plan and scheme to get best results from his waning strength."

Dr. Ottolengui tactfully and pleasingly introduced the last speaker of the occasion, Dr. Charles O. Kimball, of New York, whose toast, "Order is the First Law of Heaven," led him to expatiate on system, continuity of thought and progressiveness.

Dr. Ottolengui dismissed the guests after a vote of thanks on this exceedingly interesting occasion, which was an honor even to this metropolis of ours.

THE BURROUGHS.



NOTE.

Exception has been taken by Dr. M. L. Rhein to our New York correspondent's report of his remarks before the First District Dental Society on page 1236, December number. He says: "It would appear from the few remarks that he has used in reference to my discussion that I am opposed to asepsis and sterilization in office work, when, on the contrary, my entire objection to the method presented by Dr. Ottolengui was due to the fact that it lacked the efficiency we should endeavor to reach." It is sometimes an easy matter, as Dr. Rhein intimates, for a wrong impression to be made when only a

brief synopsis of a report is given. Even in a stenographic report mistakes frequently creep in and a speaker is made to appear as advocating something foreign to his theories. We are glad to present Dr. Rhein's statement as to his true position on the question of asepsis.—EDITOR DENTAL REVIEW.

PRACTICAL HINTS DEPARTMENT.

EDITED BY G. W. JOHNSON, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, THE DENTAL REVIEW, 55 State street, Chicago, Ill.]

Retaining Rubber Dam in Position:—Instead of beads strung on floss silk for retaining the rubber dam use bits of half vulcanized rubber.—*M.*

Repairing Punctures in Rubber Dam After Adjustment:—Take a piece of surgeons' adhesive plaster of the proper size, slightly warm it and cover the puncture. It will effectually seal the opening. I got this idea from Dr. Pherrin, of Central City, Iowa, and I believe it is original with him.—*J. V. Conzett, Dubuque, Iowa.*

Spots in Pink Rubber Facing:—When the red or black rubber is forced through the pink and shows in front, the spots may be drilled out with an inverted cone bur and the cavities filled with pink gutta percha. It will harmonize with the pink rubber and not be conspicuous in the mouth.—*F. A. Graham, Harbor Springs, Mich.*

Lime Water for Viscid Saliva:—In patients whose saliva is viscid and tenacious, and where the teeth are covered with glutinous material, a mouth wash of lime water—procured at the drug store—will clear up the condition and relieve the difficulty better than anything. The constant use of lime water in such mouths will eventually change the character of the secretions and render the mouth and teeth more easily kept clean.—*M.*

Capping a Pulp:—I do not advise capping pulps when fully exposed, but when nearly so or when the case indicates I always use

cement. I never use guttapercha or any substance that will not set hard and remain rigid. I mix chinisol with the cement, taking a tablet and shaving a small quantity into the liquid and then mix the cement in the ordinary way. Care should be taken not to cause pressure while flowing the cement over the pulp. I have been using this preparation for over a year and have not found anything that will equal it as a mild, antiseptic, non-irritating capping material.—*C. J. Hadley, Chicago.*

Lancing an Alveolar Abscess:—Sometimes this is a painful operation with the ordinary hand lancet. The tubular lancet made for the engine is in many cases much preferable, and if manipulated properly is much less painful. It should be kept very sharp, and previous to using it should be dipped in carbolic acid, 95 per cent. Revolving the engine rapidly, the end of the tube should be gently pressed to the gum and the pressure very gradually and delicately increased so that the tube will cut without appreciable force being exerted on the abscess. In this way a deep abscess may frequently be reached with almost no pain, and with less apprehension on the part of the patient than if an ordinary lancet is used.—*E. D.*

Take Care of Your Eyes:—I had an experience recently, the relation of which may be of benefit to other workers in porcelain. Shortly after using the electric oven there came on an acute inflammation of the retina, manifested by partial loss of vision, flashes of light as of sparks of electricity, etc. An immediate visit to an oculist served to allay present fear and in the course of an an hour or two sight was again normal. The point is this: What proved in this case to be temporary, it shows which way the wind blows.

The oculist stated that diseases of the retina are common among those who habitually expose their eyes to intense light, such as dentists confront in the electric oven and when fusing platinum solder. The remedy is to use smoked glasses when soldering platinum and baking porcelain and the duty to take this precaution should be considered imperative by every dentist who values his eyesight.—*M. L. Hanaford, Rockford, Ill.*

For Gold Operators:—Fig. I represents a cavity where the use of the rubber dam or napkin would be ineffectual, therefore an ordinary

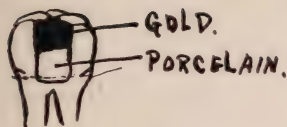


Fig. I.

and straight and made a groove extending across the surface for retention of gold. This inlay was cemented to place, using hot compressed air to keep the cavity dry, and after allowing time for the cement to set under pressure I covered it with hot paraffin and dismissed the patient for two days. Then the rubber dam and clamps were easily adjusted and a moss fibre gold filling inserted as if it were an ordinary contour, hand pressure filling. Fig. II represents a cross section of tooth and filling.—*Homer Almon.*



Fig. II.

For Holding the Dam in Place in Certain Cases:—Occasionally we wish to use a Perry or other mechanical separator, between molars, or second bicuspid and molars, and in order to do so the clamp must be dispensed with. In some cases this is an easy matter, for the ordinary ligature will suffice. But in others the form of the crowns makes the operation difficult. As a rule in these cases the clamp should be placed on the further tooth temporarily. Then the floss silk is carried between several times to make sure that the edge of the rubber is forced completely down about the neck.

Now, here are two good ways of holding it without resort to the old bead method. First, take two pieces of silk. Double up one end of each piece and tie thereon a large knot. Pass both threads into the space so that the knots are opposite. Next pass the lingual thread through the next space forward down under the side of the clamp. Now the threads are drawn taut, with the knots in place, and tied like a single ligature. Often it is sufficient simply to draw the knots into place and clip the threads without encircling the tooth. Second, in a very unfavorable space, for example, one between the second and third molars, where it would seem that the dam could not possibly be held without a clamp, I have succeeded by using instead of the thread, a small rubber band. If one can succeed in getting this to a sticking point, it is surprising how it will hold its place. When the dam has thus been secured, the clamp is removed and the separator

quickly adjusted. This done, one may feel sure that the rubber will stay in position as long as desired.—*Garrett Newkirk, Los Angeles, Cal.*

MEMORANDA.

DEATH OF DR. DAVID LESLIE STINE.

Dr. Stine, of Indianapolis, died December 7, 1904, following an operation for appendicitis. Dr. Stine was a brilliant operator, particularly in gold work. He was universally respected and his death came as a shock to all his friends.

THE FRATERNAL DENTAL SOCIETY OF ST. LOUIS, MO.

At the annual meeting of this society the following officers were elected: Burton Lee Thorpe, president; E. P. Dameron, vice-president; S. H. Voyles, secretary; W. E. Brown, treasurer; executive committee, E. E. Haverstick, W. L. Whipple and T. G. Donnell.

THE BRITISH DENTAL JOURNAL.

The journal of the British Dental Association will in the future be issued twice a month instead of monthly. It comes out on the first and fifteenth of the month. We congratulate our British confreres on this evidence of progress in their national publication.

KENTUCKY STATE DENTAL ASSOCIATION.

The next annual meeting of the Kentucky State Dental Association will convene at Lexington, Ky., May 15 and 16, 1905.

We anticipate a most pleasant as well as profitable meeting and a cordial invitation is extended to the profession.

Masonic Building, Louisville, Ky.

W. M. RANDALL, *Secy.*

OHIO STATE DENTAL SOCIETY.

At the thirty-ninth annual meeting of the Ohio State Dental Society, held in Columbus, December 6th, 7th and 8th, the following officers were elected: President, S. D. Ruggles, Portsmouth; first vice-president, H. L. Ambler, Cleveland; second vice-president, H. C. Brown, Columbus; secretary, F. R. Chapman, Columbus; treasurer, C. I. Keely, Hamilton.

F. R. CHAPMAN, *Secy.*

RECENT PATENTS OF INTEREST TO DENTISTS.

- 776,466. Handpiece for dental engines. Frank K. Hesse, Boston, Mass.
 - 776,468. Fountain tooth brush. Arthur Hosmer, Ft. Worth, Tex.
 - 776,348. Dental dilating forceps or appliance for dental or surgical use. George H. Parsons, East St. Louis, Ill.
 - 776,204. Dental handpiece. Alson C. Sargent, Des Moines, Iowa.
 - 776,718. Patrix-holding device for filling teeth. Calvin M. Beam, Shelby, N. C.
 - 776,833. Dental vulcanizer. Albert Goebel, Camden, N. J.
 - 776,834. Safety valve and blow-off. Albert Goebel, Camden, N. J.
 - 777,521. Detachable tooth-facing for bridgework of gold plates. Miles L. Leob, Cleveland, Ohio.
 - 777,536. Electrical controller. Weston A. Price, Cleveland, Ohio.
- Copies of above patents may be obtained for ten cents each by addressing John A. Saul, solicitor of patents, Fendall building, Washington, D. C.

JOINT MEETING SOUTHERN BRANCH NATIONAL DENTAL ASSOCIATION AND
TENNESSEE DENTAL ASSOCIATION.

The eighth annual meeting of the Southern Branch, National Dental Association, will meet jointly with the Tennessee Dental Association at Memphis, Tenn., February 21-23, 1905. Special railroad rates, one and a third, certificate plan.

J. A. GORMAN, *Cor. Secy.*
Asheville, N. C.

SOUTH DAKOTA STATE DENTAL SOCIETY.

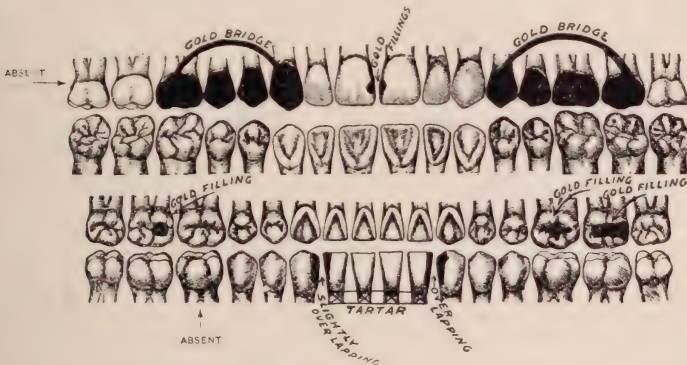
At the 1904 meeting of this society, held at Aberdeen, a very interesting time was had. Dr. E. K. Wedelstaedt, of St. Paul, Minn., and Dr. W. D. James, of Tracey, Minn., were in attendance and aided materially in making the meeting a success. The following officers were elected for the ensuing year: President, Dr. Lamme; vice-president, Dr. Robertson; secretary, Dr. A. W. Fossum, Aberdeen, S. D.; treasurer, Dr. L. F. Straight. Executive committee, Drs. O'Neil and McCartney were elected members. Dr. C. E. Stutenroth and Dr. F. N. Palmer (to succeed himself) were nominated for membership on State Examining Board. Next meeting, June, 1905, at Mitchell, S. D.

J. W. Ross, *Secy.*

DESCRIPTION OF NUDE BODY OF MURDERED WOMAN FOUND ON CUTLER MOUNTAIN,
DECEMBER 17, 1904.

The body was that of a woman well developed and apparently well kept, but discolored from fire and exposure to the elements. The face, nose, lips, chin, left side of neck, both ears, shoulders and breasts burned so as not to be recognizable.

She was probably between twenty-five and thirty-five years of age; weight, about 120 to 130 pounds; height, five feet two or three inches; light auburn



or ash blonde hair, part of which was burned off; skin evidently fair, with no birth marks or scars showing; small bones; limbs well rounded; hips and thighs large; very small hands; nails clean, long and well manicured; feet small; toes even and straight, nails manicured; probably wore a No. 2, 2½ or 3 shoe.

TEETH.—The teeth were large, white and chalky. In the upper jaw on the right side the wisdom tooth had never developed; the second molar

was present with no fillings. A bridge extended from the first molar to the cuspid. This bridge was of solid gold and worn on the Linguo-Mesial portion of the crown. The first and second bicuspid being absent, their places were supplied with solid dummies. Two gold fillings of medium size in the mesial of the upper centrals or incisors. The upper teeth protrude slightly. In the left upper jaw a gold bridge extended from the first bicuspid to the second molar; a peculiarity of this bridge is in the fact that the second molar is made of a bicuspid dummy. The third molar or wisdom tooth on this side is present. In the lower jaw on the right side the third molar or wisdom tooth is present; the second molar has a gold filling in the mesio-occlusal surface. The first molar is absent, evidently for some years, as the space is almost closed. Slight overlapping of cuspid on lateral. Pyorrhea of lower teeth—centrals and laterals—with considerable tartar, showing that they had not been cleaned recently. Left side: Considerable overlapping of cuspid on lateral; all teeth present on left side lower jaw. First molar, large gold filling on occlusal surface; second molar, large gold filling on occlusal extending on to the distal surface; third molar or wisdom tooth, undeveloped, that is partially covered with tissue.

All clothing, finger and ear rings, and all other means of identification had been removed from the body and no trace of same have been found, and up to the present time we have been unable to identify her.

The above description and diagram is the only evidence we have for identification.

Kindly call the attention of dentists in your city to the above description and diagram. If possible, have your newspapers print it. Address all information and inquiries to W. S. REYNOLDS, *Chief of Police*.

Colorado Springs, Colo., December 28, 1904.

KAISER'S DENTIST A SUICIDE—DR. SYLVESTER, AMERICAN, ENDS LIFE WITH A BULLET IN BERLIN.

[By the Associated Press.]

BERLIN, Jan. 10.—Dr. Alonzo H. Sylvester, Emperor William's American dentist, committed suicide here to-day. He shot himself through the head in his bedroom.

The emperor was fond of Dr. Sylvester. He created him a royal Prussian councilor, appointed him his private dentist and gave him many presents. Dr. Sylvester was the pioneer American dentist in Berlin, having come here thirty years ago. He had an extraordinarily large professional income, but had nevertheless financial difficulties.

Recently Dr. Sylvester had been suffering from a severe attack of influenza and for two or three days he had talked incoherently.

[By the Associated Press.]

BOSTON, MASS., Jan. 10.—Alonzo H. Sylvester was a native of Maine. He was graduated from the Boston Dental College in 1871 and soon after went to Berlin. He was about sixty years of age.—*Chicago Daily News*, January 10.

THE DENTAL REVIEW.

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CHICAGO, FEBRUARY 15, 1905.

No. 2

PROFESSIONAL SERVICES AND THEIR COMPENSATIONS COMPARED.*

BY B. J. CIGRAND, B. S., M. S., D. D. S., CHICAGO.

In the past the dental profession has devoted considerable attention to organizations, associations, societies, clubs and fraternities, calculated to advance the purely scientific side of dentistry. Tonight let us presume that we are a unit as to the etiology of dental caries, that we fully comprehend the causation of pyorrhea: that our knowledge is complete concerning root-canal dressings and that the underlying principles of crown-work are fully known. Hence let us dispel from our minds all such subject matter as pertains to the technic and practice of dentistry and consume the evening upon a theme fully meriting our closest and most earnest attention. This paper hopes to express in an emphatic manner the necessity of closer fraternalism on the interesting subject of professional remuneration. If I were to choose a text from which to draw inspiration I could choose none more applicable to the occasion and in concert with my mind and purpose than that liberalism voiced by Lincoln, "With malice toward none, and charity for all."

I fully appreciated the responsibility of this task, but you as an organization, through your executive committee, have decreed that this be my subject, and true to that trust I cheerfully serve.

This is an age of centralization; the trend of the times is toward combining forces and uniting energies of a similar character. At no period of civilization has there been expressed so pronounced a purpose of affiliation. Institutions of industry and commerce have recognized the good results growing out of mutual concern. The

*Read before the Odontographic Society of Chicago.

individuals, too, discern the benefits of such organizations and hence union of effort has resulted in general uplifting of condition. In fact, this disposition on the part of both corporate and individual enterprise has brought about circumstances which control the growth and progress of every known human effort, our own profession being influenced in countless ways. This spirit of association has ripened to such a degree that union and existence have in many vocations become synonymous terms. In no land is the spirit for union so earnest as in America, where our form of government was the direct outgrowth of the principle of "In union there is strength." It behooves us as a profession to heed what other liberal callings are doing in this modern battle for recognition and supremacy. The eager corporation or the enthusiastic individual both recognize their rights under our National Constitution which admits that the pursuit of happiness shall be a cardinal principle in our form of self government. This affiliating influence was long since recognized when the National Association of Dental Faculties decreed by mutual resolution and contract that all members of this organization teach certain prescribed branches, that the minimum time required be definitely stated, and that the fees be within certain limitations. This union of colleges has brought about many blessings to the profession not generally recognized. First among these good effects must be mentioned that this organization has kept from our midst the "night school scheme" and kindred diploma mills which in a very short time would have flooded the country with incapable practitioners. Charge to the Association of Dental Faculties such abuses as you please, you nevertheless must confess that this body, with the aid of the National Association of Dental Examiners, has diligently sought to dignify your profession and limit its student body to numbers consistent with a healthy professional growth.

CHART NO. I—POPULATION.

The population of the medical profession in America is 117,602.

The population of the law profession in America is 74,445.

The population of the dental profession in America is 25,318.

The population of the oculists' profession in America is 1,995.

Now, if the Faculties Association has, through its *trust* and *union* principles, advanced the fees and time for dental study and

crowded to the wall cheap and disreputable diploma mills and night schools, why can not the united dental profession inaugurate a plan which will put into effective force a combination of interest that will preclude the possibility of a cheap and advertising man to be among us? So arrange the affairs that the advertiser quickly realizes that if he seeks a good remuneration he will find it best, wisest and safest to uphold the charges. I often feel compassion for the dentist who resorts to advertising: *First*, because I believe no man will fall to that depth of professionalism unless he is driven because of a lack of means to make an honest, ethical living. *Second*, he does not possess that intuitive element of getting the price his services are worth. He labors along, toils without vacation, struggles for the price of existence, then in the final effort of his life succumbs to the beggardly thought that "self preservation is the first law of nature."

If there are those who by nature love to advertise their goods and price in open market, I would suggest that you permit them to enjoy this form of vanity but induce them to have the price high enough so that the neighbor practitioner need not blush at the sight of the morning newspaper. We all will grant that they are entitled to liberal consideration since the general public accepts them as members of our profession. Unfortunately the laity has not yet been fully educated to that realm where the price-advertiser is understood. They still class him with his calling, little suspecting that that calling has many layers of strata. Hence the difficulty of training the public. Let us rather give our efforts to inducing respectability in the price advertiser. It will be simpler to convert the erring dentist than to enlighten the general public. It is possible that the institution from which the graduate hails is indirectly responsible for the low or meager charges he makes for his services. Colleges at the present as in the past, teach the technic theory and principles of the art and science of dentistry, but fail to educate the student on that very important subject of dental fees.

The student likely after leaving the college thinks that all he need to charge is a slight advance above infirmary prices and in this thought he blunders along, stunting his own financial growth and inducing a variety of abuses and injuries to his fellow practitioners. Quite often, too, the element of previous occupation, or servitude, controls

his judgment as to the fees he requires; his employment may have exacted long hours with little pay—and hence he is mentally unprepared to demand the fee which his new life and career indicates.

With a conviction that this latter deduction might be correct I have for two years given to my senior students special lectures on the subject of remuneration for dental services. The classes have enjoyed these lectures and I am satisfied they have done some good in the direction of elevation of financial standards. The colleges might with wisdom and propriety have their candidates for graduation sign a contract or agreement—an Aesculapian oath, if you please—in which the candidate for the degree of Doctor of Dental Surgery affirmed on his honor that he would not degrade his Alma Mater and profession by price advertising. But after all, experience as a dental teacher covering a period of fourteen years has taught me that such Utopian ideals are likely to be early shattered. In this audience there are teachers who will cheerfully corroborate the statement that there are students of good moral tendencies who would sign such a statement, yet, after a few years of practice in contact with the tempting environment of city life, forget not alone the good council of his dental instructors, but even the basic principles of morality taught at his mother's knee.

At a time when we wish to harmonize and cordialize, the practitioners in dentistry let us not forget the truth in the old English verse:

“There is so much *bad* in the best of us
And so much *good* in the worst of us,
That it scarcely behooves the most of us
To talk about the rest of us.”

It has been a difficult task to determine the remunerations in our profession. We have not made records of fees a part of our literature and hence many of these facts must be gotten through correspondence and by conversations. During the past year while attending thirty-four dental gatherings in various states I made it a point to inquire into the general financial status of our profession. In rotundas of hotels and anterooms of sessions I learned of facts and conditions not to be gathered from our periodicals and books. Many of these deductions will be surprising, I well know, but I shall give them in the hope that they may stimulate a census or inquiry of a more national character.

Regardless of the aim of raising the remunerations of our practitioners, statistics of a varied kind would be profitable in the curriculum of our science. In gathering the consensus of opinion I sought to learn of the grievances of the delegates and members and it was a general and emphatic complaint that our fees were too meager; that operations which demanded skilled and conscientious attention as the administration of anæsthetics, where the practitioner practically took life within his charge, the fee was so insignificant that I will not dignify the price paid to pronounce it a fee, compensation, or remuneration, but stamp the charge by the commercial word price, which has within its meaning the unstable definition of a fluctuating bargain-counter symbol. Could you dream of the lawyer, oculist, surgeon or physician assuming the responsibility of human life at the paltry sum that it would require four cases to net one dollar? Such a disposition on the part of dental practitioners holds our calling on the low level of a trade. Then we have the subject of root-canal fillings, those distressing, tortuous canals where you waste life force, exhaust your nervous energy and bring to your entire being, mental and physical, a tedium not yet clearly described in our dental vocabulary. I sometimes think this operation oft brings a peculiar tired feeling not yet properly named.

This trying, exacting and painstaking dental operation, for the most part, does not receive the consideration of meriting any charge. Some few operators are disposed to remove the pulp, seal the apex and dress the canal for a figure varying between one and five dollars, believing they have charged an exorbitant fee. The fact is, this operation is universally performed at entirely too low a figure. The treatment of abscesses and antrum disturbances, cleft-palate-obturators, difficult cases of mal-occlusion and complex cases of dentures, warrant a fee according to the obstacles encountered, including the disposition of the patron. Not infrequently the patient fully acquainted with the task would be willing to pay any multiple of our currency but we fail to place the proper appreciation upon ourselves and present a bill depreciating not only the fee but the patient's respect for dentistry.

It not infrequently happens that a dentist extracts a tooth possibly injuring the alveolar process, incidentally fracturing the septum or leaving an alveolate within the wound. Subsequent irritation

inducing the call of the physician, who in turn takes patient to hospital and the patient under the influence of chloroform merges from artificial dreams observing surgeons in long white robes meandering about the cart. The case heals quickly, the family physician is lauded, the dentist abused and promptly a check for \$25.00 or \$50.00 sent to the careful surgeon. The dentist knows nothing of this transaction, he is not consulted. Had he been consulted he would with his light tweezers eliminated the spicula, adding no charge for the post extraction services; but the general surgeon has reaped a harvest in the wake of a successful dental operation. This incident I quote in the hope of bringing about a closer and more fraternal spirit between the parent profession and its youngest kin. When this is effected such burlesques, quite at the expense of the dentist, would be impossible. Besides the incident proves that if the operation performed by the surgeon was worth such a fee, why, if the dentist himself had reduced the swelling, relieved the pain, and caused the distress to subside in post extraction cases, is he not entitled to extra remuneration? The inflammation and disturbance is often due to the patient's careless disregard of the dentist's advice or counsel. Yet whether from cold or acquired foreign matter the dentist gives post extraction service *gratis*. This is an imposition on our practitioners and we ourselves are the ones on whom rests the blame. The general public would pay but we have not educated ourselves in the art of collecting fees.

The surgeon often performs operations purely within the dental province, yet receives financial consideration decidedly in excess of what the dental practitioner might hope to obtain.

Wherein is our equity in such a procedure? Why can the physician and surgeon exact fees for services we have every possible license to perform and we submit a bill reduced by a large divisor?

When we analyze the previous training and general career of the surgeon or physician we can not comprehend the causes for such flagrant discrimination in adjustment of equivalent surgical services. We devote sixteen years to our training—so do they. The percentage of dentists who hold the M. D. degree far exceeds the physicians who hold the degree of D. D. S. As a profession we are the best qualified and organized—why hesitate to charge?

CHART NO. II—EDUCATION.

The education for general practice of these professions is about the same. They all spend about the same length of time in school, eight years at the public, four at the high, and practically four at college.

The several colleges where they obtain their respective trainings register as follows:

Medical colleges in America, 120.

Law colleges in America, 90.

Dental colleges in America, 51.

Surgical colleges in America, 16.

Oculist colleges in America, 3.

CHART NO. III—REMUNERATION.

The greatest remuneration for services to one person is as follows:

Mr. Dill, a lawyer of Pittsburg, received \$1,000,000.00 for serving Mr. Carnegie in his suit with Mr. Frick.

Next in the list we find a medical fee of \$50,000.00. Dr. Pepper, of the University of Pennsylvania, in medical service to Senator Beaver's family.

The highest surgical fee without a great loss of time goes to Dr. D. A. K. Steele, of the University of Illinois. He received \$15,000.00.

The highest remuneration received for operative dentistry comes from the office of Dr. Younger, California, who received \$7,000.00.

The *Pacific Medical Journal* in the course of an able editorial, says the following:

"Why a lawyer should be paid 500 per cent more than a doctor for doing five hundred times as little work, we suppose is entirely owing to the fact that the lawyer is that much more capable of taking care of his own interests. Exactly why the secular press of this country should take the same view of the case is a mystery. A case in point. The daily papers are congratulating ex-President Harrison on receiving a fee of \$25,000 for four hours' work in court; had a medical man of equal ability as Mr. Harrison charged a many times millionaire \$5,000 for a month's constant attention, the whole press would be charging him with robbery—a man to be avoided when you

are sick, etc. Another case in point. Judge Levy, of this city, has just allowed a firm of attorneys a fee of \$80,000 for looking after the routine business of an estate for a few months, and yet this very same judge refused to allow a fee of \$30,000 which a medical man had presented for many months' attendance on a millionaire and his family. The actual work was probably one hundred times more than that performed by the attorney who received \$80,000; while the responsibility was probably five hundred times more, yet his honor, Judge Levy, saw fit to cut the doctor's fee down to \$10,000. And why?"

CHART NO. IV—DENTAL FEES.

The highest remuneration which has been reported to me comes from Dr. Younger, the operation consisting of a pyorrhea treatment, receiving the sum of \$7,000.00.

The highest practice remuneration in oral surgery is reported to be that of Dr. Garretson for cleft palate case, the fee being \$3,500.

The largest fee collected for prosthetic work comes from Dr. L. K. Stewert, of Chicago. The appliance being a bridge. Charges \$2,700.00.

The most extensive fee paid for single operative case seems to come from the practice of Dr. Atkinson, of New York, who received \$1,500.00 for curing and filling a central tooth for an actress.

Orthodontia, too, claims some very high remunerations, the most extensive charge coming from Dr. Angle, who collected \$1,400.00; Dr. Rollo Knapp, eleven gold crowns, \$2,200.00; Dr. Griswold, one denture, \$1,500.00; Dr. Taggart, two dentures, \$1,000.00; Dr. A. W. Horton, one implantation, \$500.00.

The question of tenure of service may not appeal to you as being of any importance in registering our equity in the matter of remuneration, but careful study will convince you that the duration of dental service is considerably shorter than the other professions. Our hours of work are considerably limited, and all we earn comes from the chair. In short, we are not able to practice at such an age as the physician and lawyer, we have as our harvest time a period of about fifty years, granting that the dental student at the age of twenty-one receives his degree, at the age of seventy-one he will have attained to that mile-stone of life where he can no longer hope to merit the

confidence of new clients. Your age will have incapacitated you for the finer technic, your eyesight likely sustained injuries from the strain of our specialty while the constant caution has provoked a variety of nervous disturbances and the peculiar pose of the dentist at the chair, yielding little exercise, inaugurating some weakenings, hence the years for actual practice are placed at a high figure at seventy-one. Dr. C. Edmund Kells Jr., of New Orleans, wrote: "The years of advantageous practice of a dentist are comparatively few, with the lawyers and physicians each succeeding year but adds to his experience and usefulness; but with the dentist it is quite different, for at the age when either of the others would be in the prime of his profession the dentist is on the decline."

This we all accept as the plain truth, hence the dentist must be better paid, since in his years of decline and retirement he will require the means earned while in the days of vigor. The dentist as a usual occurrence, leaves the chair and bench only to wait for years the sound of Gabriel's horn. Quite different with the physician and lawyer who practice their professions way into the dim light of life. Thousands of them are receiving the highest fees of their lives when past the mile-stone of seventy-one. They continue earning splendid salaries until, as the poet says, "When aged and feeble they saunter into the silent halls of death."

The danger side of the dental life further prompts us to the realization that we should, according to the vernacular remark, "make hay while the sun shines."

If statistics furnished by large insurance companies can be relied on, the number of dentists who die young and suffer from acquired consumption is considerably in excess of any of the other liberal callings.

CHART NO. V—CAREER.

The physician leads us all when it comes to continually practicing his profession. His age, not his work, seems to disqualify him for aged practitioner, the age being placed at 85.

The lawyer continuing until 80.

The surgeon practicing until 75.

The oculist until 73.

The dentist usually retiring at 70.

CHART VI—ANNUAL INCOME.

The highest price or income is placed at \$5,000,000.00, attributed to the office of Mr. Moore for combining the American tin plate concerns and attending to other practice.

The next highest income, professionally, \$250,000.00, from the great surgeon, Dr. Mayo, of Rochester, Minnesota.

The largest annual income in the medical profession is placed at \$100,000.00, the practitioner being the eminent Dr. Osler, formerly at the Johns Hopkins University.

The largest annual income attributed to dental practice is placed at \$50,000.00.

This same chart shows that the average income of the surgeon leads the other professions, being placed at \$4,400.00.

The medical follows with a figure \$3,450.00.

The dentist comes next with \$2,700.00.

The attorney is close at \$2,575.00.

The verdict is that two causes induce the high mortality rate. first, position at the chair and confinement in small offices. Second, likelihood of contraction from consumptive patients. The percentage of dentists who succumb to tuberculosis is placed at 11 per cent, while lawyers show as low as 8 per cent and physicians barely 7 per cent. Physicians suffer least from nervous ailments, while lawyers register higher and dentists the maximum. These figures go to demonstrate that our vocation demands fewer hours, longer vacations, better salaries to lengthen life as compared with the sister callings. I have for fourteen years annually inaugurated my vacation of four weeks from August 1st, and my patrons know this date. Besides, I have so arranged my practice that certain definite hours of the week I dismiss dentistry from my mind and occupy the time in affairs as positively opposite to dental science as can be found. In this pronounced change I get rest—rest is but another term for rejuvenation, and this in turn means vigor, and without vigor you can not accomplish good results in dentistry and naturally can not demand a corresponding good remuneration. The element of health enters into the equation of salary and fees in a most emphatic manner. The most dreadful calamity that can befall one of our profession is to allow his practice to make a slave of him, to toil and labor without recreation, to so highly esteem the pleasure of operating

for your patients as to deny yourself the necessary breathing spells and opportunities for nervous reinforcements. A most troublesome point is the method of arriving at the judgment of the fee. Many dentists charge by the "clock system," others by the "service rendered system." I am inclined to the belief that the operation when complete should merit such price as is in accord with the material used, energy employed, disposition of patient, and general standing of patron, regardless of what the clock was doing in the meantime. The clock system has so many objectionable features that I have long since taken the clock from the eyes of my patient. When you follow the clock you feel so completely at the mercy of your patient that it annoys you to answer the 'phone; distresses you to welcome a new-comer; and grieves you to shake the hand of a friend; every moment of the specified time belongs to your patient; you are a *serf*; when you leave the chair to attend to these essential interruptions, you must stop the professional clock, much as a timekeeper at a foot-ball game stops his watch to allow for recuperations and injuries. I have discarded the time system. I despise the tread mill, I love to live.

I quite agree with Dr. McKellops, who once told me this about fees: "I never allow a patient to snap a watch at me as an inference to hurry and keep down the price. I am not racing with either sun or moon when I am inserting a gold filling."

It is true your patients will compare notes and get acquainted with your prices, but we must at some time convince the public of the variety of circumstances which control the charges of any given operation. I contend that scarcely any two operations, even in the same mouth, are precisely similar, hence I have fought the idea that Richmond crowns, dentures, fillings, treatments, or even extractions, should have a standard price. We do not deal in commodities, we do not aim to typify in our reproductions we are controlled by living organisms, subject to the great and divine law of molecular change, and correspondence; hence our dominion admits of a variety of charges for what appears to be the same operation or construction.

CHART NO. VII—EQUIPMENT.

The average dental equipment amounts to about \$900.00.

The average surgical equipment amounts to about \$600.00.

The average medical equipment amounts to about \$400.00.

The average ocular equipment amounts to about \$300.00.

The equipment of the lawyer I have placed at \$1.00, this being for a pen and one bottle of ink.

CHART NO. VIII—MATERIAL.

In the matter of the expense of the material used in these various callings, the dental is far in the lead with an annual expense to average practice being \$466.00.

Oculists come next with an expense of \$348.00.

Surgeon, \$176.00.

Law, \$25.00.

When we attain to this era of our professional progress, we shall have arrived within the portals of a truly dignified calling. This is the realm where we belong, and no time is so prolific of results as the present. Why do we delay in our attempt? Does not the mother profession teach this attribute, and does not the kindred profession of law dispense with the old and commercial idea of the clock and the material?

Who can put a just valuation on the restoration of a neglected and abnormal denture of a millionaire? Should he receive the same bill that some hard-toiling servant girl or widowed mother anticipates? My answer is, No; give the poor the benefit of every hour of the day at the least possible cost, and charge the rich, the affluent, the wealthy as in the days of Alexander the Great—"charge them a fee in keeping with their earthly blessings."

So in our evening discussion let us be calm, generous and charitable. Great good will result from a movement such as advocated, provided we remember that in bringing about a union of forces we must deal kindly with those elements in our profession, though we dislike and even abhor them; the concessions, audiences and caucuses given to those who now block the way will prove our wisdom and establish a unity of purpose in our profession; it will aid in placing our noble calling within the cycle of learned and dignified professions—serving the public and ministering to the suffering and distressed.

If my paper has prompted any present to foster the idea of such a union of effort I shall be abundantly repaid for the tedious task of preparation which was made in the interest of the profession

I love, a profession whose financial renderings to me have been generous beyond my anticipations, and in whose folds I count the closest and dearest friends of my life.

HIGH-FUSING PORCELAIN BAKED AT A MELTING POINT OF GOLD.

BY C. M. BALDWIN, D. D. S., CHICAGO.

Baking porcelain has been too much like waiting for the jury's verdict to be satisfactory, and various means have been tried to remove some of the causes of the uncertainty.

To make a perfect bake one time, and a more or less imperfect bake the next time, when the same attention has been given to details in both cases, causes a "worried look" until the porcelain is removed from the furnace and the results are known.

Wherein lies the chief difficulty in baking porcelain in the electric furnace?

Sufficient heat is easily secured, but what about the superfluous heat that causes overbaked crowns and inlays? How do you know just when the required temperature has been developed? When the porcelain is held in the hand it is very easy to see whether it is well fused or not, but how many can be certain of its condition when it is being fused by looking directly at it through the open door of the furnace?

For a single baking this method requires looking repeatedly into the heated furnace, and such a practice followed daily would soon irritate some eyes to such an extent that the operator would be unable to recognize a good fuse while baking. This direct method causes considerable loss of heat, because the mica must be raised repeatedly, for it is impossible to see the condition of the porcelain accurately, looking through the scorched mica.

Because comparatively few can follow this method for a long period of time without the eyes being seriously injured, and because many others would have difficulty in detecting the proper fuse, the various time methods have been adopted. To time the bake from the cold or heated furnace, or from one of the many melting points

of gold, are all more or less unreliable in proportion as time alone is the measure of the temperature in the furnace.

Either of these time methods could be made sufficiently reliable if the electrical current received by the furnace was always the same. An employé of the Edison Company stated that the company endeavored to maintain the current at all times at 115 volts for the consumer's use and that it should not vary more than 1 per cent, or from one to two volts. This variation takes place in the main circuits, which the company has means of testing at prominent intersections, in order to keep the voltage as uniform as possible.

In addition to this irregularity on the main circuits, the end circuit of which one's office forms a part, is subject to the variations produced by the shifting loads placed upon it. This causes the furnace to receive a current that is liable to constant fluctuation. The voltage recently read in this office showed from 114.5 to 117.5 volts, while a previous reading gave 118 volts. Under such conditions it is not surprising that baking of porcelain has been an uncertain problem, when any method of determining the heat has been employed that did not secure the bake against the irregularity of the current.

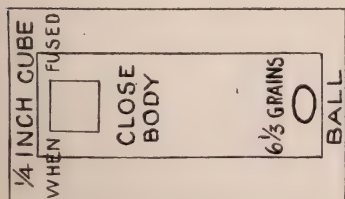
There is great need of some method that will accurately indicate the temperature in which the porcelain is baking at the exact time that the desired fuse is secured, so that the heat may be decreased immediately to prevent an overbake. "Time allowance" after gold melts removed some of the uncertainties of baking, but this method left many chances for failures, as was demonstrated in the paper in THE DENTAL REVIEW (December, 1904).

It is desirable to eliminate "time allowance" with its uncertainties. After gold melts, or during time allowance, more or less gold volatilizes or passes off as vapor and the platinum wires are endangered.

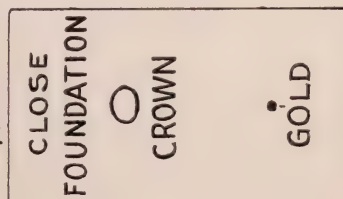
This will be increased when large masses of gold are used during long time allowances, but the danger will be reduced to the minimum (if gold is used) when a very small amount of gold is heated only to its melting point and the heat is decreased at once. (See tests.)

The conditions and positions in the furnace make it possible to fuse the high-fusing porcelains at the same time that the melting

OLD No.9

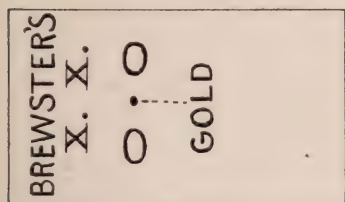


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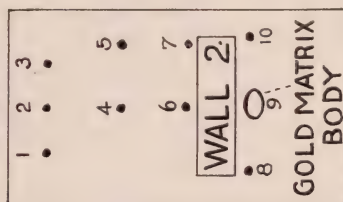


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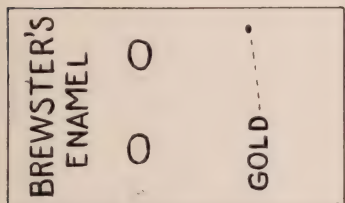


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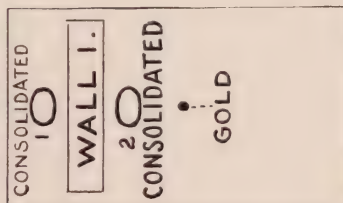


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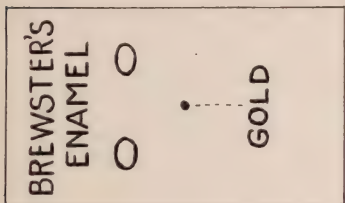


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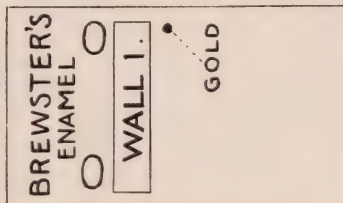


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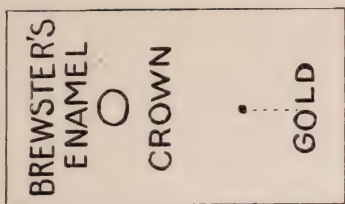


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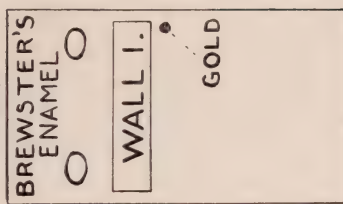


DOOR

No.4



DOOR
No.9



DOOR

point of a piece of gold is reached, and this is termed the "ideal relation of gold and porcelain."

The melting of the gold is the signal that the porcelain is fused and that the electrical current should be shut off. The object of baking porcelain is to secure the proper fuse, and the gold is used for the purpose of indicating, as nearly as possible, just when the desired fuse takes place.

The paper in the December DENTAL REVIEW contained a test demonstrating that Close foundation body ($2,300^{\circ}$) could be fused at the same time that a gold ball melted.

The diagram of this test (old No. 9) is reproduced here to compare it with this series of tests. The gold ball weighed six and one-third grains, while the cylinder, No. $\frac{1}{4}$, used in each of these tests weighs about one-tenth of a grain.

The principles that were found to cause unequal heat within the furnace when testing the melting points of gold have been the basis for making the tests that appear in this paper. It will be necessary to study the table, diagrams and notes to be able to appreciate the conditions that influenced the different tests. The numbers of the tests do not give the order in which they were made, as they have been grouped for comparison.

The tests were made in the Hammond No. 1 furnace, receiving the regular 110-volt current. Several different muffles were used during the series of tests, and but slight variations were noticed, viz., one became heated sooner than another, and in one the end wall section showed more heat, etc.

Test Old No. 9.—This test is only partially reproduced here, but sufficiently to compare it with the tests shown in this paper.

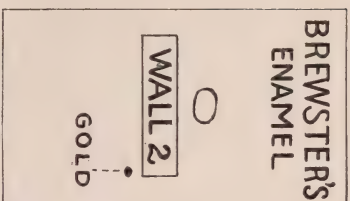
There are great contrasts between this test and Nos. 5, 18 and 19 of this series. Compare buttons, time, positions, wall, gold.

The porcelain in test No. 19 is a much higher fuse than Old No. 9.

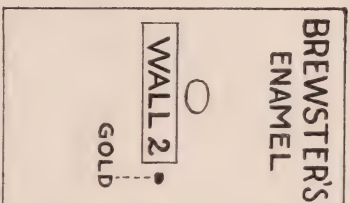
Test No. 1.—This gives one of the positions that fuses Brewster's XX body. This XX body requires but little above the melting of gold to be given a good glazed surface.

The positions in the test allow the porcelain the equivalent of twenty seconds after its own melting point. (See tests in December paper.)

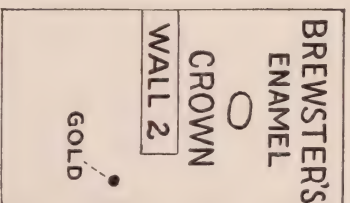
No.10



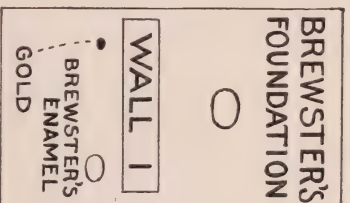
No.11



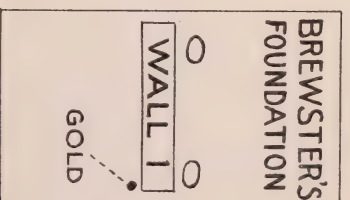
No.12



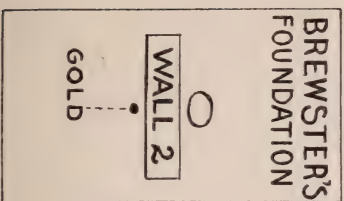
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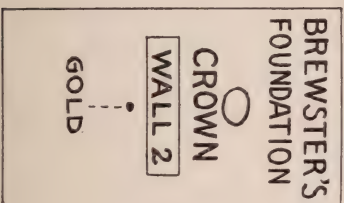
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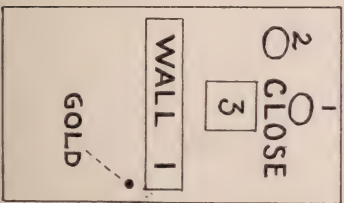
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No.15



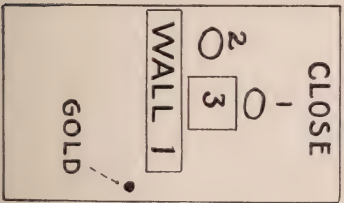
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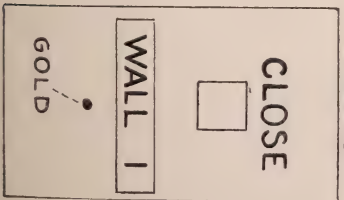
DOOR
No.17



DOOR
No.18



DOOR
No.19



DOOR

DOOR

DOOR

DOOR

DOOR

To cause a higher or lower fuse from this or any of the following tests, apply rule on page 123.

Tests No. 2 and No. 3.—Both of these positions give a rather low fuse to Brewster's enamel. In all of the tests carefully notice the elevation of the gold in addition to the space between the gold and the porcelain. No. 2 was baked with a weakened current (be-

PORCELAIN.	Porcelain Elevation.	Gold Elevation.	Gold Condition.	Daylight or Dark.	Button Used. Time.	Wall.	Relations to Wall.	RESULTS.
Test Old No. 9 Close foundation fuse 2300°	$\frac{3}{8}$ in.	$\frac{3}{8}$ in.	$6\frac{1}{3}$ grains ball.	.....	1-9 min. 2-2 " " 3-2 " " 4-2 " " 5-1 $\frac{3}{4}$ "	.....	.....	Porcelain fused to good glazed surface.
Test No. 1 Brewster's XX added to fused enamel, fuse little above gold.	$\frac{3}{8}$ in.	$\frac{1}{4}$ in.	Ball.	Day- light.	2-5 min	.....	.. ..	Well fused.
Test No. 2 Brewster's enamel, fuse 2084°	$\frac{3}{8}$ in.	$\frac{1}{4}$ in.	Melt- ed slight- ly.	Be- com- ing dark.	.....	.....	.....	Low glaze.
Test No. 3 Brewster's enamel, fuse 2084°	$\frac{3}{8}$ in.	$\frac{1}{4}$ in.	Ball.	Night.	4 few sec- onds.	.....	.....	Fair glaze.
Test No. 4 Brewster's enamel, fuse 2084°	Top of crown $\frac{5}{8}$ inch	$\frac{1}{2}$ in.	Melted almost to ball.	Be- com- ing dark.	1-5 min 2-2 " " 3-1 " "	.....	.....	Good fuse.
Test No. 5 Close founda- tion, Cus- pid Crown, fuse 2300°	Top of crown $\frac{5}{8}$ inch	$\frac{5}{8}$ in.	Melted very slowly to $\frac{1}{3}$ size of cylinder.	Day- light.	1-5 min 2-2 " " 3-2 $\frac{5}{8}$ "	.....	.....	Very good biscuit.

coming dark), and would have received a better fuse if the gold had been melted to a ball.

No. 3 was baked at night, and button No. 4 was used for a short time. Compare with other tests made after dark, or where button No. 4 was needed.

Tests No. 4 and No. 5.—These very satisfactory bakings give the results obtained in a practical case of crown work. The crown was

placed in the same position in both bakes, but the gold elevation and distance from the porcelain is changed. (See table and diagrams.) The crown is unusually short, but some allowance must be made for its elevation to a less heated level, in contrast to the position that

PORCELAIN	Porcelain Elevation.	Gold Elevation.	Gold Condition.	Daylight or Dark.	Button Used. Time.	Wall.	Relations to Wall.	RESULTS.
Test No. 6 Brewster's Gold Matrix, fuse 1760° Gold Melt 1913°								
1 Gold		1— $\frac{1}{4}$ inch.	Ball bright	Day- light.	1-7 min. 2-3 " inter- rupted 1-2 min. 2-4 "	No. 2.	1—in- side.	All of the gold pieces inside of the wall were melted. The two pieces most ele- vated were least melted. The porcelain was the only piece outside of the wall that showed any change from the heat. It fuses 150° low- er than the melt- ing point of the gold.
2 "		2— $\frac{1}{4}$ inch.	Ball bright				2—in- side.	
3 "		3— $\frac{1}{4}$ inch.	Ball bright				3—in- side.	
4 "		4— $\frac{1}{2}$ inch.	Almost ball				4—in- side.	
5 "		5— $\frac{3}{8}$ inch.	Ball dull				5—in- side.	
6 "		6— $\frac{1}{4}$ + inch.	Ball bright				6—in- side.	
7 "		7— $\frac{1}{8}$ inch.	Ball bright				7—in- side.	
8 "		8— $\frac{1}{8}$ inch.	Un- melted				8—out- side.	
9 Porcelain	9— $\frac{1}{4}$ + inch.	.....	.....				9—out- side.
10 Gold		10— $\frac{3}{8}$ inch.	Un- melted				10— outside	
Test No. 7 Consoli- dated fuse, 2190°	$\frac{1}{8}$ in.	$\frac{1}{4}$ in.	Melted almost to ball.	3-4 min.	No. 1.	No. 1 inside. No. 2 outside	No. 1. Good biscuit. No. 2. Good glaze.
No. 1								
No. 2								

the same porcelain would be given if it were an inlay and placed but one-sixteenth of an inch above the floor.

The Close foundation was baked with button No. 3 in two and five-sixth minutes in daylight, and the enamel was baked when it was almost dark with button No. 3 in one minute. The variation of the current is very great at times, viz., between bright daylight and a very dark, stormy day, and between good daylight and after dark.

Test No. 6.—In this test a transverse or partition wall is employed to counteract the cooling effect of the entrance. The positions shown in the diagram should be studied with the table giving the elevations. The furnace was heated until the porcelain became

PORCELAIN.	Porcelain Elevation.	Gold Elevation.	Gold Condition.	Daylight or Dark.	Button Used. Time.	Wall.	Relation to Wall.	RESULTS.
Test No. 8 Brewster's enamel, fuse 2084°	$\frac{1}{8}$ in.	$-\frac{1}{8}$ inch.	About $\frac{1}{3}$ melted.	Be- com- ing dark.	3--few sec- onds.	No. 1.	Inside	Good glaze.
Test No. 9 Brewster's enamel, fuse 2084°	$\frac{1}{8}$ in.	$-\frac{1}{8}$ inch.	Ball.	Day- light.	3--20 sec- onds.	No. 1.	Inside	Low glaze.
Test No. 10 Brewster's enamel, fuse 2084°	$\frac{1}{8}$ in.	$-\frac{1}{8}$ inch.	Ball.	Day- light.	1-5 min. 2-4 " 3-45 sec.	No. 2.	Inside	Very high glaze.
Test No. 11 Brewster's enamel, fuse 2084°	$\frac{1}{8}$ in.	$-\frac{1}{8}$ inch.	Ball.	Day- light.	1-5 min. 2-2 $\frac{1}{4}$ "	No. 2.	Inside	Good finish glaze.
Test No. 12 Brewster's enamel, fuse 2084°	Tip of crown $\frac{1}{2}$ + inch.	$-\frac{1}{8}$ inch.	Melt- ed to $\frac{1}{2}$ size.	Dark morn- ing.	1-7 min. 2-2 " 3-6 $\frac{1}{6}$ "	No. 2.	Inside	Very nice finish glaze.
Test No. 13 No. 1.— Brewster's foundation, fuse 2210° No. 2.— Brewster's enamel, fuse 2084°	$\frac{1}{8}$ in.	$\frac{1}{4}$ in.	Only par- tially melt- ed.	After dark.	4-over 5 min.	No. 1. No. 2.	No. 1. Inside No. 2. Out- side.	No. 1. Very high glaze. No. 2. Fair glaze.

fairly well glazed, but the apex of the pyramid did not change shape.

This Gold Matrix body fuses about 150° below the melting point of gold. (F. 1913°.)

Gold Nos. 1, 2 and 3 are all on the same level and are in less heated positions than Nos. 4 and 5, except that the elevation of Nos. 4 and 5 more than counterbalance the difference in heat due to the difference in distance from the end wall. Nos. 1, 2 and 3

melted to bright balls, while Nos. 4 and 5 were less melted. No. 5 was melted more than No. 4 because of its nearness to the side wall and to its lower position.

Contrast No. 7, which is melted to a bright ball, with No. 8, which is unmelted.

They are on the same level, but separated by the wall, and No.

PORCELAIN.	Porcelain Elevation.	Gold Elevation	Gold Condition	Daylight or Dark.	Button Used, Time.	Wall.	Relations to Wall.	RESULTS.
Test No. 14 Brewster's foundation, fuse 2210° 2 small inlays.	$\frac{1}{8}$ in.	$-\frac{1}{8}$ inch.	Just began to melt to ball.	Day- light.	3-about 30 sec.	No. 1.	Inside	Both good biscuit.
Test No. 15 Brewster's foundation, fuse 2210° 1 inlay	$\frac{1}{8}$ in.	$-\frac{1}{8}$ inch.	Ball.	Day- light.	1-5 min. 2-8 " 3- $\frac{1}{2}$ "	No. 2.	Inside	Good biscuit.
Test No. 16 Brewster's foundation, fuse 2210°	Tip of crown $\frac{1}{2}+$ inch.	$-\frac{1}{8}$ inch.	Ball.	Dark morn- ing.	1-5 min. 2-4 " 3-6 " 4-1 $\frac{1}{2}$ "	No. 2.	Inside	High glaze. A little less would be better for the biscuit, tho' there was no appear- ance of overbake except the glaze.
Test No. 17 Close foun- dation, fuse 2300° No. 1.— No. 2.— No. 3.—	$\frac{1}{8}$ in.	$-\frac{1}{8}$ inch.	Un- melted.	Be- com- ing dark.	1-5 min. 2-2 " Inter- rupted 1-2 min. 2-2 " 3-2 $\frac{1}{2}$ " Inter- rupted	No. 1.	Inside	No. 1. Least fused. No. 2. Next. No. 3. Best, low biscuit.
Test No. 18 Same pieces as No. 17. No. 1. } No. 2. } Positions No. 3. } Changed	$\frac{1}{8}$ in.	$-\frac{1}{8}$ inch.	Ball.	Day- light.	1-5 min. 2-2 " 3-3 " 4-5 sec.	No. 1.	Inside	All good glaze on surface facing floor. No. 1. Least fused. No. 2. Best, good biscuit. No. 3. Fair biscuit.
Test No. 19 Close foun- dation, fuse 2300°	$\frac{1}{8}$ in.	$\frac{1}{4}$ in.	Un- melted.	Day- light.	1-5 min. 2-5 " 3-3 " Inter- rupted 1-2 min	No. 1.	Inside	High glaze, like enamel finish.

8 is about one-fourth of an inch nearer the entrance than No. 7. No. 10 is in an equally heated position with No. 8, except that it is elevated one-fourth of an inch above No. 8, and that places it in a less heated level; so, of course, it is unchanged in form,

Test No. 7.—The wall in this test is larger than the one used in No. 6, and a reverse effect is caused by the wall, as it has been given such a deep position that it accentuates the difference between the less heated section adjoining the end wall and the section receiving the maximum amount of heat just in front of the partition wall.

The gold is retarded by its elevation, but aside from this it is in almost as great heat as the porcelain No. 2.

There is a transverse section of the muffle about half an inch wide where the maximum temperature is developed, that is quite evenly heated. This belt begins about seven-eighths of an inch from the entrance and extends to within about three-eighths of an inch of the end wall. As the distance from this strip increases, the heat gradually decreases.

Tests No. 8 and No. 9.—Brewster's enamel fuses about 170° above the melting point of the gold. In these tests the gold is more than one eighth of an inch nearer the floor than in No. 7 and the wall is not so deep in the furnace. The positions of the wall and gold are the same in both No. 8 and No. 9, but the porcelain in No. 8 is further from the end wall than in No. 9; therefore it is in a more heated position, and a higher fuse is the result, although the general heat to the muffle was greater in No. 9, as is shown by the gold occupying the same position in both tests and being melted to a ball in No. 9 while only partially melted in No. 8.

The difference between the gold starting to melt and the gold melted to a ball may mean anywhere from a very few seconds up to a minute or more.

Sometimes the gold has begun to melt, and either it stops for a time or has progressed so slowly that several minutes have elapsed before it became a ball. This may happen when the button used is hardly equal to melting the gold, while if the next higher button is used probably the gold will become a ball almost instantly. At such times one should be prepared to immediately return the lever to button No. 1.

Tests No. 10 and No. 11.—These tests show the different results to be gained by slight changes in the wall and the gold. The same wall is moved a little to one side in No. 11 and the gold is advanced to a position of increased heat. The other conditions are

alike in both tests. The difference in buttons and time probably is largely caused by a variation in the current, though both tests were made in good daylight.

Test No. 12.—This was a short pin crown, and because the porcelain is elevated, as compared with No. 11, the positions are changed. The porcelain is given the most heated position and the gold is withdrawn slightly. Compare light, buttons and time with No. 11. The comparison of buttons and time used in different kinds of light is very interesting and instructive, but it rather shatters one's faith in time methods for fusing porcelain.

Test No. 13.—The contrast of positions and heat relations is well demonstrated in this test. Brewster's foundation body ($2,210^{\circ}$) was in the zone of maximum heat and was very highly glazed, while the gold ($1,913^{\circ}$) outside of the wall was but slightly melted; therefore the difference in temperature was quite a little over 300° . The gold and enamel ($2,084^{\circ}$) occupy positions of equal heat, except that the gold is elevated to a less heated level, which in this case amounted to about 170° difference in heat levels.

Compare with Nos. 14, 15 and 16.

Test No. 14.—The wall is deeper than in No. 13 and the gold is nearer the floor and deeper in the furnace, both moves being toward higher heat, which cause it to melt on button No. 3 in thirty seconds.

Test No. 15.—This variation from No. 13 and No. 14 gave a good biscuit fuse with wall No. 2.

Both gold and porcelain occupy less heated positions than in No. 14, but this was equalized by the difference in the walls.

Both No. 14 and No. 15 were baked in good daylight, and both used button No. 3 for the same time.

There is less than a minute's difference in the positions of the gold in these tests.

Test No. 16.—The wall and gold are placed as in No. 15 and the crown is in the hot belt.

This was baked during a very dark morning, and the current was weak, making it necessary to use button No. 3 for six minutes and button No. 4 for one and a half minutes.

The porcelain elevation extended from about one-fourth of an inch to about one-half of an inch above the floor. The positions gave a higher fuse than is considered a good biscuit, although there

was no evidence of weakness as is seen in overfused porcelain. No. 12 was baked the same morning and button No. 3 was used for six and a half minutes, although the gold was much more exposed to the heat than in this test.

Tests No. 17 and No. 18.—No. 17 was interrupted several times and the gold remained unmelted.

The slight difference in time (thirty seconds on button No. 3 and five seconds on No. 4) and button with the wall slightly moved to the side caused the gold to melt to a ball in No. 18, which was baked in good daylight, while No. 17 was baked when it was almost dark and the gold was unchanged. The gold in No. 18 was more exposed to the heat from the inner chamber, because the wall was moved, and this means less heat to the porcelain at the melting of the gold. A better fuse would be obtained by placing porcelain as in No. 19 and the gold next to the wall on the median line at the same elevation as in these tests.

See table for results of changing porcelain.

Test No. 19.—This remarkable test was the result of one of the first bakes with wall No. 1 and gave a heat difference of over 400° . The porcelain ($2,300^{\circ}$) is fused to an enamel-like finish and the gold remains unchanged.

This porcelain is considerably more fused than that in old No. 9. The surprising feature is that button No. 3 was used for only three minutes. The porcelain received the highest heat on the median line, and wall No. 1 served to increase the heat more than wall No. 2.

The gold did not melt because it was nearer the entrance than in any other test except No. 6, where a wall was used, and the one-fourth of an inch elevation still further retarded it. Compare button, time and results with old No. 9 and with other tests where button No. 3 was sufficient to complete the test. Compare with No. 5, which had no wall.

It is a very decided advantage to be able to bake all of the different porcelains ranging from Brewster's XX body to Close foundation body with the one weight of gold, indicating the correct fuse of each kind of porcelain. This removes the necessity of having to select the correct weight of gold to indicate the fuse of a certain porcelain.

Under the same conditions (the usual condition of the furnace) the cylinder No. $\frac{1}{4}$ will melt at the same temperature, but because the muffle is so unevenly heated in its different sections, and because the electrical current is so variable, the time and button required to melt the gold in the many different positions that may be used by the "ideal relation" method will be liable to vary, more or less, with each baking. The different temperatures recorded by the tests at different levels is remarkable and should not be overlooked when baking porcelain.

Porcelain in the form of an inlay receives greater heat when placed upon the tray, but little above the floor, than a crown receives in the same position, but the porcelain of which is elevated so as to occupy the axial level.

The heat at the various elevations gradually decreases up to the axial level and then increases toward the roof.

Notice the retarding influence of elevation upon the gold, as shown by the tests, but especially in Nos. 2, 4, 5, 6, 13 and 19.

Under the same conditions a certain position more or less distant from the gold will always sustain the same heat relations to the gold. Because some sections of the furnace attain a higher degree of heat than other sections in the same length of time makes it possible to fuse Close body ($2,300^{\circ}$) in one part of the furnace simultaneously with the melting of the gold in some other part of the furnace.

The correct adjustment of gold, porcelain and wall will accurately indicate any desired fuse of any of the high-fusing bodies by the melting of the gold. The partition wall shields the porcelain from the cooling effect of the entrance, and it also protects the gold from the extreme heat, hence its melting is retarded.

These features are thoroughly demonstrated by the tests.

The heat-producing power of the furnace is greatly increased by the wall, because the cooling effect from the entrance is reduced and the heat is focused around the porcelain by retention and reflection.

What effect does the wall have upon the wiring? The wires are the direct source of heat in the muffle, therefore an object will receive the maximum heat when nearest the wires.

Any substance placed between the wires and the object to be heated is a barrier to the heat, and a higher temperature will be needed to accomplish the same fuse than would be required if there were no intervening substance.

The clay covering the wires and the trays that support the porcelain and gold are such barriers. The wall acts just the reverse of this, as it is placed between the porcelain and the entrance, and it becomes a barrier to the cold. This has the effect of extending the more evenly-heated portion of the furnace toward the entrance. The effect upon the wires is to lessen the strain, because less current is needed to accomplish the same results than when the wall is not used. An unnecessary strain could be caused by the use of a wall that would make too great a difference in temperature between the two sections of the muffle.

In most of the tests the gold is in a much less heated section than the porcelain, because comparatively near the entrance, both of which permit the gold to be easily watched. This is especially noticeable when the wall is in position, as it shuts off much of the glare from the highly-heated section and presents a comparatively dark background to the eye, which renders the use of darkened glass to protect the eyes almost superfluous.

Another valuable factor when baking with the wall is that the mica remains quite clear, making it unnecessary to raise it, as even the early changes in the form of the gold are plainly seen. Because the results of these tests have been given in detail it is not expected that the same results would be obtained if the tests were duplicated in some other furnace, but it is hoped that the method has been clearly explained, so that the details may be easily adjusted in each furnace.

As a rule the porcelain should be placed in the section where the heat is greatest.

Usually the median line position is best, but a small inlay or a crown for one of the six front teeth may be placed near the side wall with the palatal surface facing the wall. This places the porcelain in the highest heat of the furnace, and the fuse will be had with the least general heat to the muffle.

DIRECTIONS FOR CHANGING POSITIONS OF GOLD.

To secure a higher fuse—Move gold to less heated positions:

1. Move gold toward median line.
2. Move gold toward entrance.
3. Elevate gold.
4. Use wall.
5. Combinations of these moves.

To secure a lower fuse—Move gold to more heated positions:

1. Reverse the direction of the moves for securing a higher fuse.
2. Move porcelain to less heated position.

CONCLUSIONS.

1. The fluctuations of the electrical current render all of the methods depending more or less upon time alone unreliable as guides for baking porcelain.

2. The "ideal relation" method gives an accurate indication of the temperature immediately around the porcelain at the time that it fuses, which enables the operator to ignore the variableness of the electrical current.

3. It is possible to bake the high-fusing porcelains at the melting point of Pack's cylinder No. $\frac{1}{4}$ by this method.

4. This method may be applied with or without the partition wall.

5. The wall increases the heat within the furnace and decreases the strain upon it.

6. The same fuse may be secured in less time, or with the use of a lower button, when the wall is used than without it.

7. The possibilities for accurate baking by the "ideal relation" method depend entirely upon the skill of the operator in selecting the positions for the porcelain, gold and wall, as all possible degrees of fuse may be correctly indicated by the melting of the small cylinder.

8. All furnaces will not give exactly the same heat relations for the same positions, hence it follows that the details that would give the exact positions for a certain fuse in one furnace would require some slight changes to produce the same fuse in another furnace.

GINGIVARIUM.

BY A. C. HEWETT, L. L. B., M. D.

[Continued from January Number.]

We delve and study how we will,
Grave doubts will halt and question still.

In a former article I strove to make plain to your readers some of the reasons for the choice I made of simples to form a compound that should aid me in curing pyorrhea alveolaris in my own mouth.

After reading what I had written it seemed almost a useless labor; for, after all, the real question is, What will the compound do?

Years ago, in that time when I was neither boy nor man, at my father's home I was left to look after the house while my parents were away. A man came up the walk and said: "I am tired, thirsty and hungry. I have no money. Can you help me?" I replied, "I think so." I gave him some water to drink, saying: "That is good for thirst. Lie down in the shade on the grass—a good place to rest—and I'll see what I can find for you to eat." On looking I found nothing cooked that I could offer. I had eaten the last bread, cake and piece of mince pie for my luncheon. There was plenty of flour in the barrel, and though no cook I thought I could make an omelet if I had eggs. A cackling hen led me to the barn and a nest, which I robbed. Kindling a fire, I took butter, flour, eggs, milk, salt and pepper (the same number of simples as gingivarium contains) and made a big omelet. The grass plot had wooed sleep, water had allayed thirst and the omelet satisfied his hunger. No question of ethics caused him to ask the elements of the water or of the grass, nor yet of the formula of the food, much less the combustion of wood, heat radiation and coagulation, properties of caloric, applied to foodstuffs that afforded nutriment. I doubt if the grassy slope and shade, the water and omelet would have been more satisfying had he asked and I been able to answer. The poor man took me and my ministering on trust; so must you, Messrs. Editor and Readers. Absolute proof I can as well offer in the one case as the other. I have eaten of the one, taken of the other.

This compound (if I may somewhat repeat) is a permanently clear preparation. No sediment falls, no scum arises. Light or age seem not to affect it. The components are *compatibles*, a fact much to its credit.

It is germicidal, antiseptic, anesthetic, antiphlogistic and anti-ferment. Applied to mucous surfaces, it is stimulating, pungent, and if not soon diluted slightly cauterant. Applied to dermal tissues and confined under gutta-percha films, or rubber-dam cloths, it is rubefacient first, then an irritant and, if copiously applied and long confined, a vesicant, causing heavy blisters slow of healing, and hence is an active, potent revulsant.

As a stomachal and cleansing alterative it is as sure as harmless.

Holding 20 per cent of cocain in solution, no "pain-killer" else ever put in bottles is better.

Dr. Ottolengui asks, "Can we find a good germicide in a *fluid* which will not injure instruments?"—THE DENTAL REVIEW, December, 1904, page 1235.

I answer, Yes. Gingivarium, a fluid, not only contains it, but it is "It." What schizomycetes or other microbes can live and proliferate after a "booze" of absolute alcohol and cocain, to say nothing of the pickling in carbolic acid and echafolta? What ingredient of the six can, by any possibility, etch steel? Try it, Dr. Ottolengui. Wash your blades well in warm water, dry them with friction between sheets of sterilized gauze or cotton, moisten well edge and sides of the blades and again wipe dry with sterilized cloths, and your blades will be "surgically clean." Excavators' drills and burs dipped in gingivarium and dried can not convey infection.

SUGGESTIONS FOR ITS USE.

First.—In all cases of pyorrhea or otherwise, if teeth have been so undermined and loosened that they can not be permanently banded to adjacent teeth and held *immovably firm*, *extract them*. No pericementum can be rebuilt around the roots of a wabbling tooth. Threads, ligatures and wires are absolutely valueless.

Second.—Instrumentation to remove all calcarious or other concretions or deposits. As preparatory for said instrumentation a local anesthetic should be applied to gingivæ and entire mucous membrane of the mouth, as advised by Dr. B. L. Thorpe in DENTAL

REVIEW, November, 1904, page 1139; or, what is pleasanter to the taste and equally efficacious, a 10 to 20 per cent solution of cocain in gingivarium. This will not only render the operation painless, but become an advance toward a cure. Dentists are quite as well aware of the importance of the surgery as I can be, but I think many overlook the necessity of absolute mechanical fixity of the loosened teeth in aid of surgical and medicinal interference.

Third.—Cleanse gingival borders and pockets by syringing warm water into them. *Do not use* peroxide of hydrogen or any of its “doubles” for the purpose of cleansing. The taste of it is disgusting, its foaming revolting and its destructive energy in any commonly used strength is so pervading on traumatized surfaces that the exudate and plasma, carrying Cytoblastema and other repair properties, are disintegrated and disorganized as fast as exuded, creating a film of vicious cicatricious blastema. Better no cleansing but wiping dry.

Fourth.—Dry pockets and borders and at once moisten them with Gingivarium, to one ounce of which has been added 43. or 91. grains coarse crystal cocain, finely powdered, thus bringing the per cent of cocain solution from 1+ (as per formula published) to 10 or 20 per cent. One drop to a pocket is ample, if well applied. Do not call the stomach a “pocket” for the 10 or 20 per cent potency. There are healing virtues in cocain greater even than its analgesia. Repeat cleansing and application of the strongest (preferred) per cent, yourself the operator, *once daily for at least a week*, and do not fear to scold your patients roundly if they do not follow directions and keep appointments.

Fifth.—At the end of the first week furnish patient with an ounce of the 1+ per cent solution, which I will name Commercial Gingivarium, for use as follows: With a toothbrush and hot water cleanse the mouth and gums after each meal, then when the brush is wet and clean drop 10 minims on bristles of brush and scrub gums and teeth; if the gums bleed at first, so much the better; lost blood will be replaced with a better supply. Then after dinner at night, immediately after cleansing, gingivarium and brushing, massage the gums with finger tips at least for five minutes, using the thumb for upper gums inside the teeth and the index finger for the other surfaces. At the end of another week patient to re-

turn for polishing, instrumentation and application of high potency Gingivarium to pockets. If, after eating, the patient's stomach is "sour" or "distressed," he should take from 5 to 10 drops of Commercial Gingivarium on sugar, or in a dessertspoonful of whisky, and repeat in an hour if not relieved.

Patients should also return periodically for repolishing, reapplication of stronger per cents, and for a resupply of "Commercial" to use as a tooth wash, and to take internally as an alterative four times daily till cure is perfected and prophylaxis against a return secured.

Now, while I will not abate an iota of praise of Gingivarium as an antiseptic, alterative, blood purifier and stomachic, I do not claim it will apply itself. Skill of the highest order in its use—Method, *Method*, METHOD—will be its own reward. Why have so many dentists been successful in pyorrhea up to a certain point and baffled beyond it? I answer, first, they have not had an efficient gingivarium; second, *Method* has by operator or patient been relaxed; and third, operators have overlooked the need of constitutional medication long after instrumentation has done its work and patients forget and neglect gingivarium, tooth brush and massage, *and fail to return at stated times* to the operator for polishing, and high potency medication.

PRESIDENT'S ADDRESS.*

BY ELLIOTT R. CARPENTER, D. D. S., CHICAGO, ILL.

Members of the Odontological Society of Chicago, Gentlemen: It is with intense pleasure, but real temerity that I rise to present to you my annual address which is a summary of our year's work. It is far from my intention or desire to stand as censor upon any papers presented within the past year, but rather to accentuate the strong points of them all that they may now bristle before our mental horizon like pickets on the fence of progress.

Dr. L. L. Davis, in his paper on "Bridge Work," sounded the note of warning against too extensive bridge work and thought four

*Read before the Odontological Society of Chicago, November, 1904.

or five teeth should be the limit for fixed bridges. Time and clinical observation have proven the extreme efficacy of the removable bridge to fill the space previously occupied by more than five teeth. It was the general sentiment of this society that fixed bridges with saddles be disapproved, although I at the time and do still claim that some small saddle bridges can be used successfully in the mouths of some patients past middle life.

Dr. E. J. Perry's paper on "The Law of Harmony" as to the color and size of teeth in artificial dentures was a most comprehensive exposition of this most puzzling and little understood subject. Coming in a way as a second chapter to Dr. Royce's paper of last year, we are now furnished with a key to shade, which, if studied closely, should guide us clear of the awful shoal marked "*artificial*" at a glance.

In conjunction with getting the general shade for a denture, there is a little wire frame known as Dressel's matching device, to which four or six teeth are waxed and placed under the upper lip as a test to ascertain if a given color harmonizes with the complexion.

Dr. Truman W. Brophy, in his paper entitled "Injudicious Medication," sounded a note of warning as to the pernicious, persistent and promiscuous use of hydrogen peroxide solutions, such as dioxogen, pyrozone, etc. That diseased and putrescent matter is carried far beyond the original zone of infection through the medium of these solutions, especially in the treatment of antral abscesses, has been proven beyond any possible doubt.

Dr. J. W. Wassall, chairman of the Committee on Oral Hygiene, read a short paper on that subject and the committee were given an extension of time in which to submit to the Society a copy of the brochure intrusted to them for compilation.

Dr. J. S. Batchelor, of Milwaukee, gave us a most interesting table clinic on gold inlays, making and demonstrating same on models.

Dr. F. E. Roach, of Chicago, a guest of the Society, read a most original paper, "A System of Inlay Anchorage for Plates and Bridges," illustrating same with well drawn charts and diagrams. Theoretically, this system of Dr. Roach's is most attractive; it eliminates much of the leverage of the Griswold attachments, having a much greater range of adaptability and more simple of construction.

We had with us in October one of our old members, Dr. Lewis Ottofy, now a corresponding member from Manila, Philippine Islands, who gave us a very instructive talk on dentistry in the Orient.

The Society was most delightfully entertained at dinner by Dr. and Mrs. C. N. Johnson, June 21st, at their home on the lake shore, but it being the month of June, brides and roses, I was unable to accept of their generous hospitality, but from the reports of all those present the affair was a most enjoyable one.

In closing, I can but comment on the vacant chair. He who has fostered the spirit of progress and professional truth, we miss him. We miss his all wise counsel, his steady hand that has guided this little Society ship of ours through many gales these twenty years, and to Dr. Harlan we now send greeting; at this our annual council we miss you.

THE AMERICAN DENTIST ABROAD: A TRIP AROUND THE WORLD.

BY J. W. EGBERT, D. D. S., MADRAS, INDIA.

(Continued from January issue.)

The practice is usually divided into three periods here in India, viz., about six months in the home office in some large city on the plains, about four months in the hill stations and two months to touring in the district. This gives variety to one's life and adds experiences that are pleasant and the reverse, and sometimes narrow escapes from cobras, scorpions, tigers, dacoits, etc., tend to put gray hairs in one's head. Perhaps a short account of one of my own earlier tours will prove interesting, so here it is:

A TRIP TO TRAVANCORE.

In these days of rapid transit it is next to impossible for an American to realize that there are places in this world where people travel for business and for pleasure in the, to us, antiquated bullock cart, pony jutka, sedan chair and canal boat, but such places do exist—in fact, are the usual thing in this land of Brahmanic wisdom (the highest and godlike wisdom) and benighted methods of exist-

ence. As Americans, we may justly be proud of our advancement in all lines of material wealth and physical comfort, for we truly know the art of living—as it is not known elsewhere. My first introductions to Indian ways of travel were made, when in compliance with an urgent telegram from His Highness, the Dewan of Travancore, I started for Tribandrum, the capital city. I left Madras in the evening at 6:50 p. m. (all first class trains depart from principal stations at night to avoid the terrific heat of the day as much as possible) on



A Native Street in Madras.

the Madras Railway for a station called Shoranore, some 350 miles distant. This part of the journey was quite as comfortable as a journey of equal length would be on the continent or in England—in fact, the service is English except in speed, that being purely Indian and considered fast, an average of twenty miles an hour at most. I reached Shoranore at 10:30 a. m. the next day, in time for the Indian breakfast at 11 o'clock. At 1 o'clock my boy had loaded my baggage into a bullock bandy and engaged a jutka for me for the next stage of the journey to Trichur, a distance of twenty-one miles.

Now, a pony jutka is not the most comfortable vehicle imaginable in which to travel; in fact, it is the reverse. It is a small cart, with a bamboo top, and is arranged to seat four Hindoos, but one American



A Nair Family from Malabar.

found it rather too small. The horse is called a country tat and is fed just enough to keep it on its legs. The driver is usually a Moham-medan, who stands with one foot on either shaft and urges his sorry

steed along with many a blow and exclamation. The horse, driver and jutka make a combination to try one's patience to the utmost and at the same time reduce him to a jelly. We were four hours in making this trip. En route many things new to the eyes of the Occidental were seen—paddy fields, palm trees of the cocoanut, palmyra and date varieties. Great avenues of banyan trees, Hindoo temples, Mohammedan mosques, curious people, elephants working as horses might work at home, all combined to keep me intensely interested. At the sixth mile-post from Shoranore we passed into the Malayalam



A West Coast Ferry.

country, or land of the Rajah of Travancore. The people are of a different type from the Tamil people. They are brownish red in color and of intelligent appearance. Their manner of dress is radically different, as both sexes wear only the lungie, or cloth from the hips down. We arrived at Trichur at 5 p. m. and went at once to the Traveler's bungalow, where the butler in charge had prepared our dinner, the usual clear soup, side dish, roast fowl, mutton curry and rice and plantain or banana fritters. We waited at the T. B. for three hours until the bulls brought up our baggage, then we went to

the landing on the backwater and inspected the cutta-wallum, which the boy had engaged for my voyage of seventy miles to Cochin. I was interested in my craft and can describe it as follows: A long, narrow, canoe-shaped boat, with a bamboo mat extending over all except ten feet at either end, where the boatmen worked. My wallum was about forty feet long and four feet broad, constructed of teak planks hewn from huge logs—the entire boat had not a bolt, nail or screw in it, but was fastened together with coir rope in a most wonderful manner. I embarked and took up my quarters amidships on a bamboo mat on the bottom of the boat. My baggage was astern and my tiffin-basket, boy and soda water were ahead. At 10 p. m. we cast our mooring and poled down the backwater. It was a most beautiful moonlight night, the gentle movement of the boat, the monotonous chant of the boatman, the glorious palms in the mellow moonlight lulled me to rest and my soul, leaving its *Lingua Shirara*, traveled in my astral body to those realms of happy recollections where all is quietness and peace and happiness. It was 12 o'clock midnight when my boy aroused me and asked if "Sahib was going to look at the stars all night?" I turned in and was soon asleep. Next morning at Moonumbum, an old ruined Dutch fort of the time of William of Orange, I landed to get fresh cocoanuts to drink and to have my *chota hazri*, or little breakfast. While there the head man of the village came and made me a present of a dozen cocoanuts and a silver-mounted stylus and sheath knife, which is used by the *Mallalies* to write upon the leaves of the palmyra palm, that method being still the one in use by the common people and was until five years ago the only method of keeping legal documents, such as deeds, wills, etc. After many salaams and expressions of good will to the *Dora* (or white gentleman), I proceeded to Cochin, where I arrived at 6 p. m. The T. B. is situated on the shore of the bay where the waters of the Indian Ocean comes in. It was just at sunset and the picture was one of beauty and quietness.

After dinner I strolled out around the quaint old Portuguese city, once a thriving seaport town, the seat of Portuguese government in India and the market place for the treasured clothes and spices of India. Now it is under native control by the Rajah of Cochin. Its commerce has departed, its importance gone, and in their place laziness, filth and Portuguese half-castes reign supreme. Where

once the Portuguese maid watched her lover from the balcony window there now sits an Eurasian maid engaged in the same girlish fancy. Thus do governments rise and fall, cities flourish and decline, people come and go, but the native remains the same dirty, quiet, meditative Hindoo that he was centuries ago. The next morning I re-embarked in a first-class cabin boat manned by a syrang or steersman and twelve oarsmen, who were to take me to the capital. Cochin is in the midst of the cocoanut country and the land on either side of the backwater is fringed with cocoanut palms. Here and there we passed



The Carriage Placed at the Disposal of Author by Sir Vikar ul Oomra.

groups of women beating the outer shells or husks of the cocoanut into fiber, which was to be woven into coir rope and coir matting to furnish homes in the United States of America. Desiccated cocoanut is also prepared by the people and shipped in large quantities to the United States and England. The vegetation was, of course, most luxuriant and tropical, and the jungle in places almost impenetrable. The first night out from Cochin we heard the cries of many animals, tigers, elephants, jackals, monkeys, etc. It was a queer feeling that came over me when I first heard the roars of a tiger in his native

jungle, a sound that would strike terror to the heart of the bravest. In the water were myriad duck and water fowl, and I passed an alligator basking in the sun. After thirty hours of hard rowing we arrived at Trivandrum. My arrival was expected and I was met by the Durbar physician and the emissaries of His Highness the Dewan and His Highness the Maharajah, for be it known that I was an American dentist, called to attend to the teeth of the dignitaries of the court. State barges, gaily decorated; native bands, high officials, all helped to welcome me to the capital. I was then driven to the



Human Beasts of Burden.

home of the Elliah Rajah, where I was entertained. For two weeks I was alternately at work and play. The Maharajah of Travancore is one of the wealthiest and most powerful rajahs in India and his court is magnificent. He is a wonderfully beneficent and progressive ruler and his gifts of colleges, museums, hospitals and similar beneficences have greatly endeared him to his people. This line of kings is one of two that descends from the Rahnies—that is, the eldest brother of the present Rajah's wife will succeed to the throne on the death of the Maharajah, whose sons are nothing in the eyes of the

court. When my duties were performed I returned to my Madras home, glad to get back to the quiet of my own bungalow.

The life in the hills is most enjoyable, and while one is busy the office hours are not so long and the recreations are many. I quit work at 3:30 and every day I play tennis, golf, croquet, or ride or drive as the spirit moves me. Our golf links are the most picturesque and difficult I have ever seen anywhere, and the air on the downs is like champagne. I was pleased to see Dr. Soule's article in the



A Car of Juggernaut—Madras.

Bur on the advisability of taking regular recreation, and I believe that most men would work better and live longer if they would give time regularly to tennis, golf or some other healthful outdoor sport instead of taking all their exercise for the year in one vacation of a week or two. The public will need educating along this line, for I had great difficulty while at home in getting a game of tennis or golf with a dentist friend, for, he said, "the people expect me to be in my office until 6 p. m., and I'll lose practice if I'm not." This is true and must be changed if dentists are to be free men. Out here

nobody expects us to be in office after 4 o'clock and they do expect a man to lead a sane, healthy life with a reasonable amount of time as his own in which he can play games or do anything else which he is inclined to do.

The practice of dentistry by the natives is unknown. The village goldsmith ties up a loose tooth with gold wire and sometimes fills up the space between the roots with lac or other waxy substance. They also drill holes through the incisors and put in gold rivets for ornament, and in the case of widows the teeth are blackened. The use of betel leaf discolors the teeth very much, but does not seem particularly harmful. The teeth of the Indian peoples are exceptionally good and strong and I am frequently asked if artificial teeth that are supplied can be used to crack mutton bones with. I have seen my servant chew up a sheep's rib like it were bread, and nearly all of these people use their teeth to crack bones, nuts, grains, etc., that would send a white man to his dentist immediately. We have many queer requests from our native clients and many letters that we never answer at all.

The difficulties of practice are great, and I think that most of us have been up against propositions that have made us sick and discouraged. There are no supply houses, and with the available ones in London or Berlin it means eight to ten weeks to wait for what one needs. Then there is the lack of intercourse with other dentists, and an exceedingly busy life to keep one from individual effort other than that which is necessary, so that the tendency is to get into grooves and stay there. Personally, I make a trip home once in three years, and although it costs about \$2,000, I believe it is a paying investment. The climate is one of the greatest obstacles, for our year on the plains is divided into two seasons, i. e., three months hot and nine months hotter, and usually there is said to be only a sheet of brown paper between Madras and Hell, and in summer that gets burned through.

PRESIDENT'S ADDRESS.*

BY J. M. WALLS, D. M. D., ST. PAUL, MINN.

Subservient to the time-honored custom of an administrative address, I will endeavor to present some thoughts that have for many years been revolving in my mind.

Assembled as we are for the twenty-first time in the history of this association, may we not feel gratified at its fortitude, and proud of the success that has marked the career of our profession during these years? Its history carries us back to the period of apprenticeship and secretism; and at the very cradle of professionalism. Through almost a quarter of a century has it stood as a beacon light to the profession of our State; a guide to all who look, and a stimulus to development, which is the mark of progress.

Never before have the prospects of universal interest and fraternal association been more apparent. The membership has steadily increased until the proportion of members to practitioners of dentistry in the State is far beyond what it has ever been before.

So representative are we in numbers that our influence should be a potent factor in furthering the interests of the profession and the welfare of the public in this commonwealth.

Truly did I say we had made progress, each year has marked the introduction of new devices whereby our work is carried on with greater ease to both patient and operator.

New processes in constructing artificial substitutes for wasted tissue, and materials with which to make them; new remedies and methods of applying them whereby operations are performed less painfully, and disease is more easily conquered.

And beyond these, have we delved into the sciences which teach all, forming the foundation upon which have been built these superstructures, telling us how to proceed in order to attain certain results and demonstrating the processes of nature.

*Read before the Minnesota State Dental Association, St. Paul, June, 1904.

But have the many distinctions of progress which have marked our career as dentists been carried on with a desire for personal honor and respect, and the benefit and emulation of the profession? In many cases the answer would be in the affirmative; in the majority, however, I would hesitate to reply.

Our achievements have not been safeguarded with that generosity of spirit and love for the profession that should have marked them. Nor is the individual entirely at fault. The dentists at large, our little clubs, our State and National Associations should place their brand of approval on and join in the "lauditis" to genius. Feelings of gratitude should be shown, and expressions of loyalty offered to those who, by industry and hard work, develop new factors for our consideration. Nor should we lose opportunity to bring before the public the true merit of their achievements.

There are many men in our profession of whom we should be justly proud and whose accomplishments (the result of years of work and energy) have resulted in valuable contributions to the world's progress.

Our contributions have been confined not alone to our own work, but have extended into the fields of general medicine and surgery, engineering and the trades.

Inventive instincts are natural to the practice of dentistry.

We lack not in these, and were the elevation of our profession dependent upon them alone, the highest pinnacle of fame would surely have been reached. It is along the lines of education and refinement that the weakness is most noticed. Harmony of ideas and unison of work in these particulars should be our endeavor.

But individualism should manifest itself in the conduct of our practices.

To enable us to make public manifestations of individual merit, however, it is readily conceived that the recipient must be imbued with that modesty and dignity that would avoid an appearance of self aggrandisement. It is here where the weakness of the individual is seen. The desire for name and fame, or rapid financial progress has been the ruination of scores of our brightest men.

The desire to attract public attention seems at times to become so strong that man will resort to any means for accomplishing these ends.

It is not my purpose to take up the subject of ethics, but to refer to it only as it affects the dignity and standing of the profession. There is nothing that so robs us of these, as expressions derogatory to the character and ability of our fellow practitioners, epitomizing the work of our confreres and extolling that of ourselves.

Respect by the laity can only be anticipated to that degree that we show respect for each other. People usually judge a class of men from the individuals of that class with whom they come in contact. If we are courteous, polite, refined in our manners, frank and open, but conservative, in our expressions, enthusiastic in defense of the profession and its members, it must at least command respect and confidence.

With these two impressions permeating the minds of the public, it can be readily seen that our work would be manifestly easier. Our patients would have more consideration for us, and therefore more consideration for our time. We could command better fees, and be compensated more nearly in proportion to the demands made upon us than we are at present. There are some in our ranks that are living up to this ideal, but it is difficult and discouraging for so small a minority to drag such an incubus at their heels.

How nearly akin to the trades are we drawing ourselves when we so far lose sight of dignity as to make unjust criticisms of our compatriots or the work they have performed for the purpose of impressing individuals with our own superability.

The rendering of services such as examinations and consultation without demanding a fee for them is most erroneous. Is it surprising that consideration for time and appreciation of services are entirely lost sight of by the public when we persistently offer them without compensation?

Be it understood that charity should not be lost sight of. Properly administered it will assist greatly in furthering the interests herein set forth. As with mercy, so with charity. It "falleth like the gentle dew from heaven and is twice blessed; blessing them that give and them that receive."

Not until we impress the fact upon the people that it is our time, energy and skill for which we seek compensation will they separate us from the merchant or tradesman. Let it be clearly understood that we have nothing merchandisable to sell.

Very truly, our materials for supplying lost tissue are expensive and we must consider that, in making our charges for work, but not in a way that will lead either our patients or ourselves to feel that it is a foundation for charges. They are used only as a means to an end.

Our incomes should correspond somewhat with that of the people with whom we would naturally be associated in points of education and refinement, without compelling us to resort to methods that savor of quackery.

People as a rule are willing to pay what a thing is worth. The only question would then arise as to the consideration of worth, and this, in the opinion of the writer, would be the simplest part of this entire question of fees, if the profession would take the stand among the other professions that it deserves.

In summing up the qualities that are necessary in the individual and the responsibilities of the profession as a whole for the assumption and maintenance of a more lofty position than we have yet enjoyed, they should not be found difficult of attainment. The time is coming when this ideal shall be realized. But it is approaching too slowly. The concentrated action on the part of the members of our society should press it close to the goal in a comparatively short time. This generation of dentists should enjoy the benefits and pleasures of such a position before our careers have ended.

As an organization our State society has done much, but its efforts must be accelerated. Put personal prejudices and jealousies aside; cut loose from the narrowness and selfishness that has pervaded our ranks to such an extent, and work for the education of the people, and ourselves. Then and then only will we broaden out into that mature development which will place us in the full confidence of the public. Then will places of honor and diplomacy be freely open to us, and appreciation of work and distinction of respect change our vocation to a degree that but few of us at present enjoy.

“THE ADMINISTRATION OF GAS IN PROLONGED
ANESTHESIA.”*

BY T. B. HARTZELL, D. M. D., M. D., MINNEAPOLIS, MINN.

(Preliminary to a Practical Demonstration.)

Mr. President and Members of the Minnesota State Dental Association: It gives me great pleasure to greet so many friends, for I prize the State meeting as much for its pleasant associations as for its professional benefits.

It is not my intention to read a paper this morning, and my excuse for coming before you at this time is to discuss some practical features of prolonged nitrous oxide anesthesia as a preliminary to the clinic of the afternoon.

It is unnecessary for me to discuss the history of anesthesia, though it is most interesting, and we as dentists will always have reason for pride that our profession is responsible for the discovery and introduction of anesthesia.

It was early impressed on my mind that it was a great thing to minimize pain, and the observation of suffering has been a constant incentive to study anesthesia, and I have devoted a large portion of my time and thought to the study of methods of gaining anesthesia for operative procedures. It might be of interest to mention in passing the line I have followed. I commenced by studying the effects of chloroform to obviate pain in cavity preparation, letting the patient inhale from a wide-necked bottle for a few seconds, then proceeding with the operation and repeating the inhalation till the preparation was complete. This method is very useful, particularly with extremely sensitive persons, though undesirable in many cases.

Next came cataphoresis and I had the honor of reading a paper on this subject before this body when cataphoresis was in its full flush. It came before the profession and now has been in a measure cast aside chiefly on account of defective apparatus. This objection has been entirely remedied by Dr. Price, of Cleveland, and cataphoresis is today far more useful than ever; for barring cases where we have intense congestion and occasional idiosyncrasy to cocaine,

*Read before the Minnesota State Dental Society.

we can always gain anesthesia by Dr. Price's methods. One objection continues to exist, it takes time, and time is money with us.

The next thing that engaged my attention was the use of air deprived of its ordinary moisture. I constructed a device that enabled me to pass compressed air through a battery of two bottles partly filled with sulphuric acid, and then through twenty feet of $\frac{3}{4}$ -inch glass tubing loosely packed with calcium chloride. Air, thus treated, is deprived of the moisture it ordinarily contains and should then be passed through an electric drier so that it is mildly warm. Air in this condition will deprive dentine of its sensitiveness and is a very useful agent in the operating room.

The next thing to engage my attention was nitrous oxide, which I began to study five years ago, because I fully appreciated the risks of chloroform. I commenced by administering it continuously, passing the gas through water in an ordinary wash bottle, thence to the patient, the bubbling of the gas through the water enabling me to judge of the rapidity of administration. I found that continued inhalation meant prolonged anesthesia. The difficulties seemed to be the uneven flow of the gas from the container, the coldness of the gas and lack of convenient inhaler. In spite of these objections, I became convinced of one thing, that prolonged anesthesia was a practical and safe thing when gas and air were combined and that cyanosis was not a necessary feature of gas anesthesia. I claim no originality, though I must say that all my teaching had been up to this time that gas should never be administered mixed with air, and that thirty to seventy seconds of workable anesthesia was all one could expect to gain under favorable conditions, and that it was dangerous to administer more than once or twice at the most, at one sitting. That these objections and difficulties have been in a measure overcome I hope to be able to demonstrate at my clinic.

Many men all over the country have been at work, and it is now possible with the Heckard apparatus to have an unlimited supply of warm gas under perfect control, so that one may have an absolutely even flow to the patient and with Teter or Clark inhalers one can mix air or oxygen in correct proportion.

I will use today a combined outfit—Heckard tank for the gas, with an oxygen and chloroform mixing device of my own and a Teter inhaler.

Nitrous oxide produces anesthesia much more swiftly than chloroform or ether, and is cumulative in its effect, making over-administration an easy possibility, though in the hands of the experienced person it is more nearly safe than any other anesthetic, the death rate being variously estimated at from one in 15,000 to one in 5,000,000 against one in 3,000 with chloroform. It takes much less gas to maintain anesthesia after it is established than to gain the condition, so I lessen the flow to the patient from one-third to one-half after the anesthetic condition is established. In most deaths attributed to nitrous oxide I find record of either fatty degeneration of the heart or atheroma and consider evidence of these conditions contra-indications to its use. Nitrous oxide acts as a mild stimulant. In the earlier stage of anesthesia it hurries the heart's action and relaxes arterial tension, making the work of the heart easier on this account. We frequently find our patients complaining of a pounding headache after regaining consciousness, such as follows the administration of amyl nitrite or nitroglycerine. The physiological effect of nitrous oxide on the brain has been demonstrated by trephining the skull of an animal; during anesthesia the brain bulges from the opening showing actual increase in the blood pressure. On account of its stimulating nature it is not wise to administer nitrous oxide soon after the ingestion of alcohol, as a condition of nervous exaltation is produced in which it is almost impossible to operate though anesthesia may be obtained. With these exceptions I have found no other contra-indications to its use, giving it freely in the most aggravated cases of organic heart disease where there were murmurs on both sides, and those are the people who take it most readily and remain under its influence longer than the robust.

It is extremely important that every operator should have a good workable supply of oxygen at hand, though its administration is purely symptomatic, many cases not needing it at all, atmospheric air being sufficient, but oxygen is the best restorative in over-administration, and I believe over-administration impossible where sufficient oxygen is given with the gas to prevent cyanosis. Some of the trouble we have with nitrous oxide arises from the fact that we overlook a very vital feature of anesthetic work, and there is one point I would like to impress upon your minds, and that is this: We should pay more attention to the sub-conscious self with the individuals under

our care. We have an unreasoning self that takes suggestion as readily as our ordinary self, and this sub-conscious self may be greatly influenced during the administration of the anesthetic. Only recently a doctor administered an anesthetic and the patient was able to tell everything that was done during the administration of it. The other day I administered nitrous oxide and I impressed the patient with this thought: "You are absolutely safe; you must breathe deeply and evenly; you must breathe through your nose." The patient remembered nothing of the operation, but she heard distinctly the words, "Breathe deeply through your nose, do not be afraid." I will cite another forcible case about which some of you may have heard. The case was that of a small child, eight or nine years old, the unhappy possessor of a club foot, who was to be operated on. The doctor wished to divert this child's attention from the administration of the anesthetic, so he took the child into the calm, quiet atmosphere of an adjoining room, and told her he was going to give her ether, but he was going to tell her a story all the time she was taking it, and he invented a story and told it to this child while the administration of the anesthetic was going forward. He began the story when he began the administration, and he continued it throughout the time of giving it. He then cut the tendons, broke up the adhesions and put on a cast. Then the administration ceased and the story ceased, the child was allowed to awaken, and she remembered and related the whole story that had been told her during the administration of the ether, but she remembered nothing of the operation. There have been innumerable lines of experiments performed by different men in different parts of the country that go to prove this positive fact, that our sub-conscious selves are able to take suggestions and act upon them, and the most important thing in giving the anesthetic is to be careful to suggest to the patient that the anesthetic will be safe, that the ends to be attained will be gained, and create a calm atmosphere about the patient. The meanest and most wrongful thing anyone can do during the administration of an anesthetic, even of chloroform, is to walk into the operating room and say, "It looks pretty shaky; he does not take the anesthetic very well; I wonder if we had not better mix a little ether with it; we ought to have given him some strychnia in preparation for this." That patient is in a perfect state of sub-consciousness, and in the administration of nitrous

oxide is even more susceptible to suggestion than during the administration of either gas or chloroform. So the period during which a man gives a clinic is the most unfavorable for the production of anesthesia by nitrous oxide, for the reason that the subconscious mind is being wrought upon by untoward influences, as there should always be a calm, confident atmosphere about the operator and the patient in order to insure the most complete success in the administration of the anesthetic. The control of the hysterical individual is gained by the use of chloroform mixed with nitrous oxide in a small amount; for this purpose I added a little chloroform chamber to the outfit and usually keep a hypodermic syringe attached to that chamber, and if the patient becomes hysterical I inject three or four minims which becomes mixed with the gas and that quiets the patient.

The most important matter in regard to giving an anesthetic after having obtained *warm gas*, a *steady flow* and the ability to *mix oxygen* with it *when needed*, is the administration of gas so you can operate in the mouth. There have been a number of devices gotten up for that purpose. With the Heckard outfit the gas is inhaled through the mouth, which has two objections, it wastes a good deal of gas and the metal tube is in the way, and the old style inhaler is objectionable for the reason that you can not work in the mouth without removing it. Both the Teter and Clark inhalers overcome this difficulty and can be used with any outfit, as the gas is inhaled through the nose only. When a patient begins to breathe through the mouth all you have to do is to close the air intake valve and you have the gas driven to the patient through the nose and mixed with air in the throat; it does not make any difference where it is mixed, you can force anesthesia with these inhalers.

I hope you will bear with me if I have reiterated some things which you already knew.

To show in detail the workings of such a mechanism before a number of men is rather a difficult thing to do satisfactorily, but in the office or in the hospital it works very well, indeed, and covers most of the difficulties met in the administration of this particular drug. I think if you use this method and try to cultivate in yourselves the ability to control the patient that your patients will be benefited.

PRACTICAL THERAPEUTICS.

THE TREATMENT OF ALVEOLAR ABSCESS.—(CONTINUED.)

BY J. P. BUCKLEY, PH. G., D. D. S., CHICAGO.

In our last article we considered in detail the treatment of chronic abscesses of the blind variety, and stated that, in those cases where the pus continues to flow freely when the dressing is removed at the third or fourth sitting, some complication can be expected, in which case it is useless to attempt further treatment by the ordinary method. Many of these stubborn cases will yield nicely to our treatment after gently forcing some stimulating agent, such as a 10 per cent solution of trichloroacetic acid or a 25 or 50 per cent solution of phenol-sulphonic acid, through the apices of the roots, having mechanically evacuated the pus previous to the use of these agents. Occasionally, however, it is necessary to surgically establish an opening through the overlying process and soft tissue and treat as an ordinary discharging abscess, which treatment will now be considered.

It is our first duty in treating these cases to locate the offending tooth. Ordinarily this is a simple matter, for the reason that the sinus usually opens immediately over the tooth from which it comes. The pus in making its exit, however, follows the line of least resistance, and in some cases the condition of the process is such that the pus burrows forward or backward and opens through the gum at a point several teeth removed from the one which is causing the trouble. These are the cases that are difficult to diagnose, especially where the abscess has been discharging for some time, when there is not much tenderness in any special tooth and where there are several devitalized teeth on this particular side of the mouth. Sometimes two teeth containing putrescent pulps have a common fistula. In this case it would be impossible to heal the tract by treating only one of the teeth. The use of a silver probe will be valuable in all of these cases. By gently working the probe forward or backward, as the case may be, the sinus can be explored and the offending tooth or teeth located without drilling into

innocent teeth—a discouraging procedure, both to the patient and to ourselves. The history of the case, as given by the patient, will often be of service, but judgment must be exercised and due allowance made. Our greatest difficulty, then, in treating many of these chronic discharging abscesses will be had in locating the offending tooth. This accomplished, the rest is easy.

The method of applying drugs to the treatment of these cases is so well known that it appears almost a waste of time and space for me to attempt to describe it. All that is necessary to effect a cure, there being no complication, is to force some *bland solution* through the root canal and fistula—thus being certain, it is well established, cauterize the tract, hermetically seal in the canals the same agent used for this latter purpose, and at a subsequent sitting fill the canals.

Frequently difficulty is encountered in establishing the fistula. For this purpose I use, in a large hypodermic syringe, an essential oil water, to which two minims of carbolic acid have been added for every fluidounce of the solution. With the anterior teeth a long straight needle is best, while a curved needle is necessary with the posterior. If the gum has been previously lanced over the end of the root, dipping the lancet in carbolic acid, and the needle placed well up or down into the canal, and the gutta percha or vulcanite rubber packed tightly around the needle into the cavity and held in place, the solution can quite readily be forced through the entire fistulous tract. There are two objects in forcing this bland solution through the fistula: one is to be certain that it is open and the other is to mechanically wash out the pus. Wherever pus can be mechanically removed it is always better to dispose of it by this means rather than to attempt to do so by the use of some chemical agent. I know it is the common practice, after the fistula is established by the use of some bland solution, to follow with hydrogen dioxide. This is often a dangerous procedure and *always unnecessary* if the first solution has been used properly and in sufficient quantity. There is no advantage in using an essential-oil water, except, in my office, it is always fresh, sterile and convenient, and it is also pleasant to the patient. After a considerable quantity has been forced through the fistula and it is well established, the canals should be dehydrated with alcohol and warm air and 95 per cent

carbolic acid placed in the canals on cotton (never use a syringe for this purpose), and with gutta percha or vulcanite rubber and a suitable instrument produce gentle pressure until the mouth of the fistula is cauterized, having alcohol ready to neutralize any of the carbolic acid that may escape in the patient's mouth. The rubber or gutta percha and cotton can now be removed (being certain that all of the cotton is *removed*). when a dressing of carbolic acid should be hermetically sealed in the canals from three days to a week, at which time, if the fistula is healing nicely and the case gives a favorable history, the root, in my opinion, should be filled. I do not believe in delaying the root-filling very long after the fistula has been cauterized, for by filling the root as soon as we are certain that the fistula is healing we can avoid a weeping condition which usually exists when this part of the treatment has been delayed for one month or six weeks.

In treating chronic abscesses that have been discharging for a considerable length of time, and where we can reasonably suspect a roughening of the end of the root or process through which the pus has been discharging, it is the best practice to substitute *pure phenol-sulphonic acid* for the carbolic acid which is generally used. In using phenol-sulphonic acid for this purpose care must be taken not to use too much and to avoid getting any of the remedy on the patient's face or clothing. Inasmuch as this agent rapidly disintegrates cotton, it should be applied to the canals on shreds of asbestos or silk. I want to emphasize the use of phenol-sulphonic acid in the treatment of all of these complicated alveolar abscesses. This agent not only cauterizes the fistulous tract, but it chemically dissolves any sharp edges, which may be a source of irritation, and prevent the healing of the fistula. Where these blind and discharging abscesses will not yield to the treatment herein outlined it is necessary to further assist nature by surgical procedures, such as the amputation of the root, etc. In these articles it has been my object to discuss the application of drugs and remedies to the treatment of various diseased dental conditions. I shall not attempt here to discuss the surgical methods employed.

In my opinion an operation is not a success whereby the dentist has treated a putrescent pulp, a blind or discharging abscess, and filled the root and crown of the tooth, if the *color* of the tooth

structure of the crown has not been restored. Inasmuch as the color of the teeth in these cases is usually lost before the patient presents himself for treatment, our next article will be on the practical bleaching of teeth.

PROCEEDINGS OF SOCIETIES.

ODONTOGRAPHIC SOCIETY OF CHICAGO.

Regular meeting held December 19, 1904, with the president, Dr. Buckley, in the chair.

DISCUSSION OF DR. CIGRAND'S PAPER.

DR. GEORGE B. PERRY:

Mr. President and Members of the Odontographic Society: I consider it an honor to be asked to open the discussion upon an essay which has been so carefully written in detail and so well illustrated by comparative charts, indicating the highest fees received, approximate number in the professions mentioned, estimated cost of equipment, average age of those following the profession, etc. I will not attempt to cover the ground in detail, as there are able men to follow me who can handle the subject with interest to all, but rather will I touch upon a few points as they appeal to me, not taking too much time from the annual election, which occurs this evening. We are familiar with Dr. Cigrand's tenacity of purpose and of his getting hold of his subject, root and branch, before he offers it to the profession or the public, as has been so recently shown in his book on "American Emblems," the reading of which will enlighten all upon the origin, development and significance of the great seal of the United States. The benefit of organization grows upon us as we become more familiar with its advantages, both social and professional. The frequent exchange of ideas has a tendency toward broadening our horizon and keeping us well in front. While we have been successful in the filling of root canals and others operations within our province, yet the investigators are continually at work in an effort to make these operations more perfect. The question of fees, as regulated by a stated rule, is a perplexing one, as each person must decide that for himself, being governed by the peculiarities of his practice, environment, ability, *clientele*, financial status of patients, etc. The temperament of a patient is a very important factor to

consider, as upon its proper reading depends much of your success and the rapidity with which your work can be carried on to a successful conclusion. The profession of dentistry keeps the operator at a high tension and he must always have himself well in hand to inspire his patient with confidence.

Different men have varying ideas as to a commensurate fee for the operation and time, and I believe each man should be the best judge as to the fee to be charged, according to the conditions surrounding him, but we are very frequently asked what we charge for an operation or piece of mechanical work and must needs give a definite reply. I do not agree with the essayist on what he chooses to call "the clock system," and neither do I feel that by making a specific charge by the hour you are reduced to the level of the day laborer, albeit the laborer's work is figured on that basis. There is a marked distinction between a man getting twenty-five cents an hour wheeling out ashes and a dentist charging five or ten dollars an hour for the filling of a root canal; the difference in the degree of intelligence required for the two classes of work is apparent to any one and should need no further explanation. Many people find it necessary to inquire the approximate cost before beginning the work, that they may decide whether it is within their limit or not. It would greatly improve the practice of dentistry if we were all so fortunate as not to quote a fee in advance of the work being done, but let the amount be charged as we thought best when making out a statement. A charge of five dollars an hour or twenty-five dollars for a crown does not necessarily mean that you collect that fee every time, but it gives you an opportunity to charge a servant as much less than her employer as you feel is just in the comparative position which she occupies. Many dentists make a mistake in not charging for examinations, consultations and treatments, all of which take our time and for which we should be remunerated, the patient receiving the benefit of our judgment and skill. The treatments for post extraction should be paid for like any other work that we do, as the necessity for these treatments clearly indicates that more time is required in getting a satisfactory result and there is no reason why the money should go into the surgeon's pocket in place of your own.

In educating the public to expect a fee in keeping with the service rendered, you are doing much toward raising the general

standard of dentistry and materially aiding the young practitioner in becoming a better dentist and receiving a more equitable return for his work.

It seems to me Dr. Cigrand has placed the length of activity of a practitioner too high, as the average life of a dentist would fall short of fifty years of service.

The confinement to the office, the cramped position over the chair, the inhaling of fetid odors from the mouth, the nervous strain, the number of hours of labor do much toward breaking an otherwise strong constitution. I believe it to be the exception and not the rule when a dentist takes sufficient open air exercise and recreation to overcome the deleterious effects of office work. So far as I know this has been the most complete and comprehensive essay written upon this subject, and I feel that the essayist has brought out many thoughts which will be a benefit to his auditors and result in a more careful consideration of fees.

DR. W. H. TAGGART:

I was very much pleased with Dr. Cigrand's paper. It is one of the most instructive papers I have heard, and I am quite sure that it will have an influence that will not be excelled by any other paper.

The aim of my life has been to become a good dentist and charge as big a fee as I can get. I think we are entirely too timid when patients come to us complaining about work done by another dentist. Naturally, they say the work was not done very well, or that they paid too much for it, and most of us are too timid to charge more for better work.

Another point we must be careful about, and that is, when a patient speaks about a very high fee having been received by some other dentist. Do not belittle that fee. Say that the man's position and that of his patient justified the fee. If possible, show your patient the difference between kinds of work that may be done by various men. Every time one dentist charges fifty dollars for a crown he makes it possible for every one of you to get five or ten dollars more for your crown. You are not only helping him, but yourself.

DR. C. E. BENTLEY:

There is another side to this question that has not been touched upon. There is no question that we do not get fees commensurate with the amount of work, intelligence and *personal* service we put

into our dental practice. There are some men in this city who, by reason of their wealthy clientele, can demand large fees and get them. There are others, also, who have not such a wealthy following, who can not charge enormous fees, for the simple reason their patients can not pay them. Again, there is the great class of young men constantly coming into the profession who must feel their way until they reach a place in their calling and experience that will justify them in asking large fees. They must be conservative and use a discriminating judgment. We should, by all means, uphold and encourage every good man who commands large fees. Such men make it possible for the rest of us to be better paid. Drs. W. W. Allport, J. N. Crouse and others have done much good in this direction in this community. We should encourage instead of decrying such men whenever the opportunity affords. But here is the other side: Why is it that two men, equally endowed technically, equal socially, starting alike, differ so widely as to their success? One is able to command tremendous fees and gets them; the other is only able to eke out a miserable existence. There is a plus besides the technical efficiency that accounts for this difference. It is personality. Most men can in time master the technique of any profession—also, they can acquire an attractive personality.

What is personality? It is the sum total of all things of life assimilated; if we value the vicious things of life personality reflects it; if we value and patronize the good things of life, personality reflects it. The association of cultured, refined people, the reading of good books, the tenderness and gentleness of manner, the kindness, the sense of justice, all are tributaries of and contribute to personality. Personality is either constantly being added to or taken from. These forces are making or unmaking personality.

This personality, when applied to a special technical calling, sheds upon it its full force of accumulation and gives to it a distinct character that sooner or later counts.

The thought I wish to leave with you is that personality is one of the greatest forces that will attract people or repel them. This accounts oftentimes for the success of one man and the failure of another.

DR. L. K. STEWART:

There is still another side to this question. The men who charge

a good fee are in a position to have good appliances and to acquire the skill necessary to give their patients good services. If you charge a good fee, you need not hesitate as to the appliance you want for the case, or the material to be used. Special skill should be compensated for, and that skill can only be acquired with special apparatus and special material.

DR. HART J. GOSLEE:

I had no thought of entering into the discussion of this paper, but will, nevertheless, take occasion to pay tribute to the marvelous resourcefulness of the essayist and the large amount of work he has necessarily been compelled to undertake in the preparation of this paper.

There are many phases of the subject that might be discussed to our mutual advantage, but owing to the lateness of the hour I will not go into them. All the gentlemen who have preceded me said something that was pertinent and to the question.

Dr. Bentley, in particular, spoke of "personality." In my opinion, personality has largely to do with the faculty of inspiring your patient with confidence in your ability and in yourself. If you can do this, I am convinced that you can usually get your fee, and it then remains with you to *ask* it.

DR. ROBERT GOOD:

Dr. Cigrand deserves to be very highly complimented on his excellent paper. I think the question of fees is entirely with the one making the charge. No patient will pay more than is asked. Put a valuation on your services; you may rest assured the patient will not do it for you. Do not worry if you lose a patient occasionally because of your fee; someone else will take their place.

No matter how great the charge, we never charge enough for the services rendered, because the dentist renders his patients better service than any man in any other profession.

A crown for one hundred dollars is more serviceable than a jewel for five hundred dollars or a bonnet for forty dollars.

DR. A. H. MURDOW:

The discussion has drifted more toward large fees than toward the fee the average practitioner can charge. I believe a man ought to get all he can, but I do not believe in getting more than the work is worth.

DR. DON M. GALLIE:

It is evident from what has been said that every one here gets big fees. I do not think that any of us get any more than we should, provided the work is right, and the fee an honest one. Dr. Good would have us infer that no matter what we charge, we are entitled to it. I see operations every day, and doubtless you do, that make me feel that it is a shame "to take the money." Our work should guide us largely in the making of our fee. We all have failures, and if we put a fancy price on work we know is not perfect, we are going into the pocket of our patient and are taking what we should not take. If we can do the work, then we can also charge for it.

I want to compliment Dr. Cigrand on his excellent paper, and I hope that his words will come true if it will be necessary for me to work until I am seventy-one to keep my family as it should be kept. But I fear that I shall do well if I hold out until I am sixty-one.

I hope the paper will do good, but I do not believe we will benefit much from the discussion because it has been along the line to dig into every pocket and get all we can. To get big fees we must give something in return.

DR. H. N. LANCASTER:

As Dr. Gallie said, the spirit seems to prevail to get all we can from our patients. That is a good idea, if it is possible. Emerson's essay on compensation is quite applicable here, in my opinion, but only in the sense of one thing making up for another. For instance, we have compensating the civilization of today, the individual and the corporation; one assisting the other; one fighting the other. As the trite saying has it, "the corporation has no soul to save."

The dentist must compensate himself in the same way. Suppose the only support of a poor old mother comes to you for dental work. He gets \$3.00 a week with which he must support himself and his mother. You can not ask him to give you eight or nine weeks of his sunshine and labor to compensate you for the expenditure of three hours of your time and a little material. We must exercise our judgment in these cases and not ask any one to pay more than he can.

DR. F. B. NOYES:

There is a difference between a profession and a trade; between selling goods and rendering a service. A professional man renders a professional, personal service and on this you can not set a scale of

prices. Such service is to be compensated for in proportion to the patient's ability to compensate.

Personality! Where do you get it? From your study, your work, your contact with people. That is where you get your entitlement to your fee. If you do personal work, throw your personality into your work, you are entitled to your fee. Your personality is your ability to make your patients see that you are rendering them a personal service in the individual case; it is not a routine operation. You are putting your individuality into your operation, and you are entitled to a larger fee because it represents a higher grade of skill, a more artistic task.

That is what we must do if we want to make a basis of charges. We must have skill and artistic taste so as to put the right thing in the right place, and then the patient pays a fee you are entitled to. I render the best service I can, and take for it what my patients can afford to pay. If the work is not worth what I charge, I am willing that my patients go elsewhere. I am willing that others work cheaper than I do, but not better than I work.

DR. CIGRAND, closing the discussion:

The discussion practically has been a continuation of the paper. It proves that the dental profession is a unit so far as professional spirit is concerned. I thank you all for what you have contributed to that thought.

The thought of the paper was liberal. I said charge according to the material and energy put into your work, the disposition of your patient, and his financial standing. Many come to your office whom you should not charge anything, but when a man comes who can pay, let him understand that your charges will be somewhat higher than those for the poor and the distressed.

The men who have made our profession were men willing to take a step forward and do their work better and charge better. When you talk about personality you talk about yourself. Bring to yourself the sacrifice and the self denial of those who have gone before. Keep up the standard of the profession—nothing is more detrimental to professional success than low emoluments. If I have succeeded in showing you that we are one—a unit—my purpose has been accomplished.

ODONTOLOGICAL SOCIETY OF CHICAGO.

A regular meeting was held November 8, 1904, with the President, Dr. Elliott R. Carpenter, in the chair.

President Carpenter delivered his annual address.

DISCUSSION.

DR. J. G. REID:

The President in his address might, at least, have said something about mapping out the future of the society, but his silence in that regard can be attributed very largely to his extreme modesty. We have been proud of his administration during the year. He has presided with dignity, and I feel like voting him thanks for the honor with which he has conducted our deliberations during the past year.

DR. GEORGE W. COOK:

The majority of the papers that were referred to by the President in his address I did not hear, but I like his resumé of those that I did hear. I feel very grateful for the services which Dr. Carpenter has rendered to the society as President since I have been a member of it, and I shall always remember his administration with a great deal of pleasure. I have been admitted as a member while he was President. My personal contact with him for several years has been pleasant, and I feel that the society has done well under his administration. Personally, I wish to thank him for his excellent address.

DR. C. N. JOHNSON:

It is a good idea on the part of the President to make a resumé of the scientific work done in the Society during the past year, and to call up the salient points of the papers that have been read. It brings them back to us again, and we can redigest them. It might have been well if the President had gone a little into the mapping out of a policy for the future of the Society, as one of the previous speakers has said, but probably his modesty kept him from doing that.

I wish to express my personal appreciation for the manner in which Dr. Carpenter has presided over our meetings. He has always lent dignity to the chair. We have been favored with the presence of many guests during the past year, and there has never been a time when we have had any reason to be ashamed of our presiding officer.

The Society as a whole feels that it has great reason to be proud.

DR. TRUMAN W. BROPHY:

While Dr. Reid was speaking these thoughts came to me: We have now entered our majority as a Society. Twenty-one years have passed since we met in Dr. Harlan's office at 70 Dearborn street, corner of Randolph, and organized this Society, and elected Dr. George H. Cushing to be the first President. Dr. George H. Cushing, if my memory serves me right, was twice elected President. There were present at that meeting only two members who are here this evening, Dr. Ames and myself. The others have come into the Society since. Out of the present membership we had in active membership then only Dr. Ames, Dr. Wassall, Dr. Kester and myself. Four of the then original members are still active members of this Society.

It is unnecessary for me to tell you how much this Society has done for dentistry, and how much the literature of the profession of this city has been enriched by the work of members of this Society. We are all familiar with the work of the past. Had we only prepared and issued the little monograph that was printed many years ago on "The Treatment of Pulpless Teeth," that would have been quite enough to have made our Society memorable down to the close of the present century, at least, and other work that has been done will stand and live as valuable contributions to dental literature. What the next twenty-one years will bring forth, no one can tell, but it is quite likely many of us will have gone over to the silent majority by that time. Among those who have passed away are Drs. Cushing, Swasey and Swain.

While the President has reviewed the work of the past year and has touched upon the most important features of the various papers that have been presented, we have before us a great work, and tonight, as I was writing a telegram that was sent to Dr. Harlan, another thought came to me, namely, what is this Society to do? Is it to keep up the standard of reputation it has made? How are we to improve it, and to make even a better record than has been made in the past? I think every member should look upon this matter in a most serious way, and individually we should resolve to do everything within our power to make the records good. Each one should feel that it is his duty to do everything he can to make the Society strong.

If we were to take out of the literature of the dental profession of this country the work done by the Odontological Society of New York, it would weaken it very much, and I think with our Society, though small, if each one resolves to do something in the next few years, to get right down to hard work and do the best he knows how, to present a carefully prepared paper on some subject that he is either familiar with or should familiarize himself with, we will make a record in the future that will be so far ahead of that which has been made in the past that there will be scarcely room for comparison. I know we can do that, but we need time.

My sympathy went out to Dr. Cook when it was announced that he would next month read a paper before this Society, because such a paper as Dr. Cook would want to write and read here would stand for the highest and best in dentistry. He would not be able to write such a paper in a month with any degree of satisfaction to himself, because he would want time for study, investigation and experimentation to do the kind of work he wants to do. It is too bad that he did not know this last spring or last winter, so as to be at work on it for at least six or ten months. And so it is with all of us. We can not read a paper of any great merit here that is gotten up in two weeks. It seems to me that this Society is peculiarly fitted for taking up and discussing some problem that is not yet solved and solve it so far as we know how, bringing out the results of our work here, discussing and learning from one another how to unravel complicated problems.

I think the paper read about two months ago on "Inlays" was of inestimable value. The whole subject is now in its infancy, so to speak, and there are few men who know very much about it. The men who understand this subject are in a very small minority. It is a great field.

Personally, I must say that I delight in coming to these meetings: it required a great deal of effort to get here tonight. I enjoy these meetings more than any other meetings I ever attend anywhere, because we come in close contact with one another. I would repeat a statement which President Harper made one night at a faculty meeting of Rush Medical College. He said that in order that men may know one another, understand one another, and know the workings of the minds of one another, the

only way is to sit together, eat together, and discuss matters informally. That has been to me one of the most delightful features of this Society. It is true, we can have our dinners at home and then come to these meetings, but they would not have the interest and zest which they now have by our coming together and eating together as we do here.

Twenty-one years is quite a while. Perhaps many a man voted today who was twenty-one years old yesterday. This Society is now getting on in years, and the next four or five or six years will mean a good deal, and the man to whom we are indebted for this Society is now engaged in active work in New York. When Dr. Harlan left this Society, it was a great deprivation for him to leave, not being able to attend these meetings. I am sure he feels it more keenly than any one does. It was one of the greatest sacrifices in leaving this city that he was obliged to leave this Society. Now he is gone, all the work is thrown on us. When he sat at the table with us, and a program was to be filled, he was ever ready to give suggestions. We must get to work at once and get out a program that will be worth the while. Every man should declare that he will do the best he knows how to bring out papers that will be high class for publication in our dental journals.

In regard to the President's address, I think he did right in reviewing the subjects that were presented to the Society during the year. We could hardly expect him to map out a future for the Society. That is for us to do. A President can suggest and his suggestions may be carried out. I congratulate Dr. Carpenter on the admirable way in which he has conducted the meetings of our Society during the past year.

DR. L. L. DAVIS:

I think it is very pleasant to have the president at these annual meetings review the work of the year, because it calls up pleasant recollections of old meetings, emphasizing the salient points made by the various essayists during the year. It brings back the gist of papers to us and the principal things that have slipped our minds, or, at any rate, have been stored away and now come back anew to us.

One thing in particular I noticed in the president's address was that there were only a few members who read papers last year. I

think there were three invited guests who read papers and five members who read papers, and I understand one of those members has been called upon to write and read another paper within the next three months. I do not object to his doing this, but I think it is well for our members to have as long time as possible in which to prepare papers.

There is one thing that has been said, and I can only reiterate, namely, that these meetings are the most enjoyable we have. I know of no society I belong to that I want to attend more anxiously than I do this. In fact, I would neglect any social duty to come here of an evening, and I can not say so much for any of the other societies to which I belong. That shows how near and dear this Society is to me. We sit here with our feet under the table, rub elbows with one another and talk in an informal way, and there is not a member of this Society who does not feel that the bond is a great deal closer than it is in any other society. That is one thing that is making this Society. It holds it together and enables it to do anything. We are apt to sit back in a large society of two or three hundred members and let the others work. Here we do our part and are willing to do so. There are a number of members who are not only willing to do their part, but they do it a second time. I know of several members who within the last two years have read two papers, while there are others who during that time have only read one paper. But we are all willing to work, and that is the thing that keeps the Society together.

I must compliment the president upon the manner in which he has conducted the honors of the office, and he has certainly done it with great credit to himself and with credit to the Society.

DR. W. V.-B. AMES:

I can not say much except to reiterate what has been said by the other gentlemen, that the year passed has been in all respects a satisfactory one, and I do not know but what it is a credit to us to say that a considerable portion of that work has been done by gentlemen who were invited to contribute papers. If this or any other society can have prestige which will enable it to procure satisfactory papers from outsiders, it is a credit to the Society, just the same.

The matter which has been mentioned so nicely by Dr. Davis, namely, that there is a certain fellowship which stimulates us to

do good work, has been dwelt upon at our annual meetings for a good many years in just about this way, which shows that there is no lagging of good fraternal feeling. I have regretted that I have necessarily had to be absent from so many of the meetings during the past year, and I really missed the best papers that were presented. I hope another year will find me more universally present. The fact of our limited membership places us in a position which eliminates the criticism which so often is made regarding large societies—that they are run by a clique. We are not enough to be a clique, and so we all come in for our share of the management of affairs, and I have no doubt that much of our success comes because of that condition. Personally, I think we ought to have Dr. Carpenter as president another year.

DR. E. J. PERRY:

When I occupied the chair as president of this Society I made the only annual address of merit, probably, that has ever been delivered to us. (Laughter.) Experience is a great teacher, and when I got through with my official term I told Dr. Carpenter to get a little book and after every meeting jot down the salient points in the paper or papers that had been read, so that when he came to write his annual address he would have an address worth listening to. And so the credit of his address tonight is due to me. (Laughter.)

When I was a young man I always used to go to prayer meetings on Wednesday nights; I say that respectfully and with a considerable degree of pride; and that is the way I have treated my engagements with the Odontological meetings. Nothing ever occurs at our house—at least only rarely occurs at our house—that interferes with my coming here. I am fond of coming here. I said to Dr. Roach the other day, when we were walking on the street, and I saw Brother Cook: "There goes Cook. He is a member of our Odontological Society." I said, "Roach, I always feel a little different toward a member of the Odontological Society than I do to anybody else. I have a different feeling for each one of those boys." He said, "I suppose you do." And I do. I make it a point, if necessary, to defend them. They are my special friends in the profession. I do not feel that way about the members of the Chicago Dental Society or the Odontographic Society. I do not hate or dislike any

of those fellows, but the feeling here is that this gathering is more of a family nature.

DR. L. S. TENNEY:

There are some things that make such a deep impression upon us that time never erases it from our memories. We can often recall incidents of our childhood, just as Dr. Perry has never forgotten how he used to go to Sunday school at one time and prayer meeting. The president's paper was a witty one, because "brevity is the soul of wit." In some respects it was ideal. Too often we listen, in presidential addresses, to page after page of platitudes, the rehashing of dry, wornout topics. The president's address should not be any more than a résumé of the year's work, a statement of what has been accomplished during his term of office. What is to be accomplished in the future lies with the members of the Society and not with the president. The future must be uppermost in our minds. The past of our Society is secure. I am a new member of it. Previous to my being admitted to membership, a few months ago, I had never attended but one or two meetings, but I have been acquainted with the work the Society has done through the medium of dental journals. I have always known of its high-class membership and the character of the work it is doing, and I know that some of the best contributions to dental literature of recent years have emanated from the Odontological Society of Chicago. Therefore I can not tell you how pleased I was when I was invited to become a member, and, while I do not expect to be an ornament to the Society, I expect to derive more good from it than from any other of my dental associations.

DR. J. E. HINKINS:

Meetings of this kind are always extremely pleasant to me. I was pleased with the president's address, because in it he covered the points in the papers that were read during the past year, thus refreshing our minds as to what had been done. When I come here I do so with a feeling as if I am going home, and what is said here is said among friends and for our scientific and mutual benefit. While we have had a good many visitors within the last year, more than we have ever had before, I can begin to see that when we have a large body here we do not observe as much of that good fellowship as we do when we have only twelve or fifteen. This Society, to me,

is one of the dearest of all dental societies I have ever attended, and I know of nothing that would give so much remorse and unpleasantness as to have the Society become larger and break up the fraternal feeling which we have.

DR. J. H. WOOLLEY :

I enjoyed the president's address very much, but I wish I could have had a talk with him before it was prepared, so as to have had him make one or two suggestions in it.

A number of months ago I introduced a resolution before the Chicago Dental Society, which carried, which was for the purpose of having each essayist send to the secretary a syllabus of the paper to be read by him, so that the members would know when they received the program what he would talk about. I felt at that time that members should have some knowledge of the subject to be brought before the Society, so that those who discussed papers could do so intelligently and possibly present some new thoughts. If every one who reads a paper is willing to send a synopsis or syllabus of it to the secretary for publication in the program previous to the reading of the essay, then in our discussions we will know what we are talking about, and we will not be like Lord Dundreary, who, when asked how he got up so many witty things, replied, "I just threw them off." And that is the way we do sometimes after hearing a paper read. We get up and express our thoughts in any way they happen to come to us, when neither the paper nor the subject has been well digested by us.

It seems to me that the real purpose of this Society is, when it speaks, to speak with authority, with well-digested thought. I hope that feature will be worked out, because I feel sure if that is done each member will have something to say and to the point.

DR. CARPENTER (closing) :

Whereas I appreciate sincerely all the kind words that have been said tonight by my *confreres* here assembled, I still believe that the annual address of the president of this Society should not be open for discussion. I believe the annual address should be a résumé of the work done during the year and nothing else. As to the future policy of the incoming administration, that should be advised by the Society itself. I believe the Society has a great future before it, and that future will be decided by the kind of corporation we keep

up, and the larger we have that corporation the poorer the future is going to be, because every one depends on the other fellow to do the work and he is not doing the best that is in him. The future policy of the Society I did not care to touch upon. I think it is up to the Society to map that out when the new officers are elected. Gentlemen, I thank you.

PROCEEDINGS OF THE MINNESOTA STATE DENTAL
ASSOCIATION, HELD AT ST. PAUL, MINN.,
JUNE 16, 17 AND 18, 1904.

DISCUSSION OF THE PRESIDENT'S ADDRESS.

DR. J. W. PENBERTHY:

I can not let this paper go by without saying something. I think the doctor has touched upon matters that are of vital importance to the profession. He has treated the profession very kindly in saying that we have made advancement, but as he also said we have fallen very far short of the goal which we should have reached before this. The ethical side of the question strikes me very forcibly. I have had occasion for some little time to know something about the ethical side of some of the profession, and it is astounding to me to see the position that some take. I will just give you an instance in point. A certain dentist was unfortunate and fractured a tooth. It was something he could not help and he could not repair the damage because he did not have an anesthetic. The patient was bound to have one, and so he recommended him to a brother dentist in whom he had the fullest confidence. The first thing the dentist asked was, "Who broke it?" The man told him. The dentist said, "I am not doing work for Smith," and he referred him to somebody else. That was a beautiful example of the ethical relations of one brother to another. Suppose he had said: "My friend, you have a bad case. My advice would be to go back and have the pulp devitalized and let it remain. I don't care who broke it, but go back again, and I assure you he can handle the case just as well as I can." That is the relation that ought to have existed between the two men. I think there is a lesson in that to all of us. We are all liable to have such accidents, and if we were to practice that tolerance and charity it would go a long way toward the goal we

are seeking. I might cite other cases similar to the one I have mentioned, but it is not necessary—the principle is the same. I think it bears very closely upon the point brought out by the president in his address. I am very glad to have heard the paper by the president, and am glad I came here and feel amply repaid for so doing in the privilege of listening to the address.

DR. S. R. HOLDEN:

I am not much of a speaker, but there is one thing that the president said that presents considerable of the same idea I have in mind, and which is mentioned in the report to be made by the committee of which I am chairman, and that is that in many instances and in many localities the profession does not receive the courtesy to which it is entitled. It seems to me there is a way whereby we can overcome that to a large extent, and along that very line I will make a report later on. I enjoyed the address very much. There was something in it for us all, and I am sure every member can carry some thought away with profit to himself.

DR. LYON:

I would have risen before, but I was waiting to hear from some of the older members. (Laughter.) As none of them rose, I thought it was about time for me to say that I enjoyed the paper very much indeed. I am no longer an active member of the Association. I have served my apprenticeship, but I come here to look on and to appreciate and absorb the good things that are given out, and I am very glad that I had the privilege of hearing this address.

THE PRESIDENT (closing):

The gentlemen have all been so kind in their remarks that I can say nothing in response in the way of discussion. I am very sorry there were not more points in the paper to be discussed. I think you will all appreciate the lesson in the incident that Dr. Penberthy related. Dr. Lyon says he is not actively connected with the Association, but I wish to take this opportunity to say that his presence is always a stimulus to activity to the other members.

DISCUSSION OF DR. HARTZELL'S PAPER ON "THE ADMINISTRATION OF GAS IN PROLONGED ANESTHESIA."

DR. H. M. REID:

While the doctor prefaced his remarks relating to the subconscious self by saying that suggestion might not be just as popu-

lar as some other things, I tell you there is a great deal in it. You may call it hypnotism or you may call it by any other name, but that sub-consciousness exists, and the man who does not recognize that fact, especially the physician of today, will soon be hoeing potatoes instead of practicing medicine. There is a great deal in it that is known and there is a great deal in it that has never been studied and brought to light. Many men have not studied the subject at all, and hence think there is nothing in it. In regard to the case mentioned, of speaking to the child while administering the anesthetic, I have seen similar cases myself. The mind is diverted to some other subject, that sub-conscious self is influenced, and the patient comes out of it perfectly clear so far as the pain or fear of the operation is concerned, and any preparation that can be made by the operator to influence the sub-conscious self of the patient is, to my mind, one of the most important things we have to study. I wish to indorse all that the doctor said on that point.

DR. L. P. LEONARD:

I am not an extemporaneous speaker, but I can not let this brief lecture go by without commenting a little upon it. In my estimation it is the finest lecture I ever heard in my life. The doctor has touched upon more vital principles and has given us more practical talk than I ever heard in any of the Association meetings, and I have attended a good many national society meetings. His statement that he has made an effort during his life to mitigate the sufferings of humanity is one that we all ought to take to heart and emulate. Twenty years ago if a man had spoken like that he would have been hissed from the floor. We were taught to be Spartans and to make our patients heroes and heroines; when they came to the dental chair they should come prepared to suffer; but today, thank the Lord, there is more of the milk of human kindness running between us, more consideration and more humane feeling existing, and the aim of the dentist today is to alleviate suffering in the dental chair as far as possible. I have administered a great deal of nitrous oxide gas during my life; and I want to say that while I am not a hypnotist I do know of the existence of that sub-conscious self, and I do know that the patient can be influenced to an extraordinary extent. Not only the sub-conscious self, but the conscious self. Any person may be influenced

by straight, honest and sincere talk, and it behooves the dentist and the surgeon to always bear this fact in mind, that he can assist his patients wonderfully, and by his actions, by a touch, by the way he handles a patient's mouth or lips, where and how he places his finger, etc., leave a wonderful impress upon the patients' minds. In fact, the operator's acts catalogue him in the patients' mind from which they read as to whether he is a kind and honest gentleman, whether they can have confidence in him or not.

I accidentally made a discovery not long ago. I have one of those gasometers, similar to the one which Dr. Hartzell says has been placed in the museum at Minneapolis, but I like mine and think it a good apparatus. As stated, I made a little discovery. I found that the tank of my gasometer would rise even if the gas were shut off, the cause being that the rubber tubing was slightly cracked, thus admitting air, which allowed the tank to rise slowly. Probably a gallon of air was admitted without me knowing of it. I turned on the gas until it registered about eight gallons, and then administered it to the patient. I noticed the patient did not grow dark and that venous condition of the blood was not present. I noticed, too, that the anesthetic lasted longer and apparently was safer, and I have since used this mixture of air and gas with good results. It can be done in this way: Disconnect rubber tubing from between cylinder of gas and tank, then lift up tank, causing air to be drawn in at bottom until about one gallon of air is admitted. Then connect tubing and turn on, say, seven gallons of gas, which gives a mixture of air and gas in the proportion of one to seven. A still more handy way to mix atmosphere and gas is to remove facepiece from patient's face for about two seconds at intervals of about twenty seconds. In this regard it does not make any difference what kind of an apparatus is used, just so the patient gets an inhalation of pure air at intervals. When you desire to produce anesthesia devoid of the symptoms of asphyxia, try this method and you will be pleased.

DR. H. L. CRUTTENDEN:

I have administered nitrous oxide for many years and with good results. I have never attempted prolonged anesthesia, and I feel very much interested in this apparatus, particularly so in view of the fact that I have had some correspondence with Dr. Heckard.

I also believe in suggestion going with it. I think we all have had some experience along that line. I have, at least, in giving an anesthetic. Seventy-five per cent of the patients to whom I have given it have told me they dreamed they were on a railroad train or in a balloon, and I am led to believe that the dream or impression was caused by the escape of gas from the cylinder. It makes a noise similar to the airbrakes on a train, and the suggestion or impression made upon the mind of the patient causes him to imagine he is on a train. A number of years ago, in line with that idea, I had a music box placed in my office and had some soft, quiet music played during the administration of the anesthetic, and with a very pleasing effect. I did not know what to call it then, but now I am aware of what it is. I am a very strong believer in suggestion. I have had some experience in my own family, and I believe it plays an important part in the administration of an anesthetic.

DR. THOMAS B. HARTZELL (essayist):

I have nothing to add in the way of discussion, but it occurs to me that there are two or three classes of operations that we can do most advantageously with nitrous oxide, which I hope to be able to demonstrate to you this afternoon. It may be well to mention two or three features in the handling of the patient. Suppose you want to remove a pulp; you put on the rubber dam, having the mouth-prop placed between the teeth, and let the handle come up under the strap that holds the rubber dam to the face. Then you will find the saliva will trouble you unless you provide for it. The patient should be tilted slightly forward so the saliva will flow out of the mouth, or you can use an ejector while the patient is anesthetized, but be sure it is metal, so that if the mouth-prop should slip it will not be crushed, as would be the case if it were glass. Then another thing well to remember is to always have a tongue forceps on the operating table close by when you are using nitrous oxide, as respiration is sometimes interfered with by spasmodic closure of the glottis, and if you have a tongue forceps you can grasp the tongue and draw it forward, quickly relieving the condition.

We pay no particular attention to the eye when we use nitrous oxide, except that we can judge of the anesthesia by touching the conjunctiva lightly, but we do pay attention to respiration, and

when it becomes a little slow we give a little oxygen and depress the patient's head, elevate the hips, and it usually quickens it immediately. There is one active measure for collapse, either with chloroform, ether or nitrous oxide, that is not generally known among the profession, a method for stimulating the nervous system, and that is the forcible distention of the sphincter ani muscle. I have known of one case where a patient was given up and where two physicians had worked over the patient forty minutes, when one of them recalled the fact that some one had told him of the efficacy in such cases of the forcible distention of the sphincter ani, and, thrusting his thumb forcibly in the anus, the patient moved and commenced to breathe. So these practical things ought to be borne in mind in regard to resuscitation.

There is one other thought, an important one, I wish to mention. A man is committing malpractice if he administers chloroform to a patient in an upright position. With nitrous oxide we may use the upright position with safety.

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EDITOR: C. N. JOHNSON, M. A., L. D. S., D. D. S.

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EDITORIAL.

RECIPROCITY IN REGISTRATION BETWEEN THE STATES.

This question has been agitated for some time, and there seems to be a general consensus of opinion in favor of such a movement on the part of the profession. Nearly every one recognizes the justice of such a provision. There should be no good reason why an individual who is qualified to care for the teeth of the people of one State should be declared incompetent or denied the privilege of caring for the teeth of the people of any other State. This is a proposition the fundamental justice of which can not be gainsaid, and every one subscribes to it, but when a universal registration plan is broached it is met with the argument that it can not be carried into effect on account of the fact that each State has the regulation of these matters within its own jurisdiction, and that it is impossible to get uniformity of action on the part of all the States.

There is one thing certain that no legislation on this subject will ever take place till the profession agitates the question in a way to demand attention. Whether it will ever be possible to get any action at Washington creating a federal standard, or whether the plan must be carried out through working for uniformity of laws among the different States, there assuredly must be decisive action on the part of the profession before anything is accomplished.

In Canada the dental profession has made a vigorous movement along this line. They are working toward the establishment of a Dominion standard and the first meeting of the Dominion Dental Council was held in Toronto September last. In the minutes of that meeting we find a very well defined plan of procedure outlined, and

a statement of the qualifications to be required of applicants for certificates of registration from the Dominion Dental Council.

There seemed to be a very general acquiescence in the plan on the part of the representatives of the different Provincial and Territorial organizations present, and it is thought that all or nearly all of the Provinces and Territories will join in the movement. At least, a sufficient number have already committed themselves to the plan to insure its success, and it is certain of accomplishment even though every Province is not at first represented.

If in any instance parliamentary legislation is required to fit into the arrangement, that will be attended to in due time, and it is justly considered that legislators will take cognizance of any movement which has behind it the moral support of so large a body of men who are thoroughly familiar with the necessities of the case and are earnestly working toward equitable conditions which can only redound to the benefit of the people at large.

It is this kind of action that we want in the United States. The profession must first come together and formulate a plan before anything can be accomplished in the way of legislation. It is no easy problem to solve and the sooner we start some definite action the sooner are we likely to produce results.

THE EDITOR'S DESK.

RESPECT FOR THE RIGHTS OF OTHERS.

I sometimes think that one of the most unfortunate tendencies of the times is the increasing disregard for the rights of others that seems to be manifest on all sides. It is not confined by any means to the end-seat hog on the street car—it permeates every walk of life. Go where you will and you find evidence of it. At a public gathering there is always the man who is determined to see everything regardless of how much he may interfere with the view of others. In a railroad train a single individual will occupy two seats—one with his grip and his feet, and the other with his miserable carcass—while a tired woman carrying a baby is vainly looking for some place to sit down. On the street car—well, the end-seat hog is not the only hog that rides on street cars. There is the man who plants himself

comfortably in a seat and occupies all the space he can with his elbows, reading his paper and forgetting to move along and make room when a woman enters the car. The one who crosses his legs and sticks his feet out in the aisle for everybody to trip over, the—but the category is too long when it comes to breaches of street car etiquette.

Then the utter abandonment of everything decent and orderly which we see manifest in the way people litter up streets and public places with refuse. Look at one of our city parks on a Monday morning in summer and see the waste paper, banana peelings, odds and ends of lunches, and every conceivable trash flung about over the beautiful grass, when baskets are hung conveniently for the express purpose of receiving all refuse. It is simply outrageous that people abuse the privileges of the parks the way they do. No man has the right to toss away a newspaper where it will litter up a public place. If he is through reading a paper on a street car the conductor will usually be glad to get it, and if not there is always a waste paper receiver somewhere on the street. Every careless act of this sort makes needless work for some one, and there would not be one-half the drudgery if people were considerate of the rights of others.

But one of the most glaring and unfortunate examples of pure selfishness and—I was going to say meanness—relates to something that I hesitate to write about. I have always held myself strictly to the rule never to say an unkind or critical word of a woman. It has been an article of my faith, and a source of my pride to be gallant enough to find an excuse for every feminine shortcoming, and yet when I see the behavior of some women in public places, on street cars, in elevators, and especially during shopping hours, and note the total disregard for the rights or feelings of others, I am shaken in my faith and shocked in my sensibilities.

I have seen the most beautifully gowned women rudely force themselves in front of others, to their inconvenience, and jostle and push in a most unladylike manner, and never think of making an apology for their rudeness. The supercilious toss of the head and the ruthless trampling on the rights of others is almost nauseating and breaks down all the fine traditions a man likes to cherish of womanly tact and consideration and graciousness. If women are not always treated with greater respect than they are by men there is

surely some reason for it, and yet I can not close without saying that even in the face of all this provocation I am secretly moved to despise the man who fails in due courtesy to womankind.

What a different world it would be if we all studied the point of view of others, and then invariably respected it.

BOOKS RECEIVED.

Transactions of the California State Dental Association, thirty-third annual session, San Francisco, May, 1904. 180 pages.

PRACTICAL HINTS DEPARTMENT.

EDITED BY G. W. JOHNSON, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, THE DENTAL REVIEW, 55 State street, Chicago, Ill.]

To Seal a Puncture in the Rubber Dam:—Press a small roll of cotton through the puncture and smear sandarac varnish over it.
M.

Adrenalin and Cocaine:—Adrenalin and cocaine work perfectly if the adrenalin is fresh, but if it has become acid in reaction they do not. Test with litmus paper and reject acid adrenalin.
M.

To Remove Sediment from Hypodermic Points:—Remove the point and pass needle through a small piece of unvulcanized rubber. Fill barrel of syringe with water and insert needle—point first—in the end of syringe. Hold the parts together and exert firm pressure on the piston. This usually is effectual.

C. W. KREAMER, Alliance, Neb.

Attaching Models to an Articulator:—By roughening the bases of the dry models they can be attached to the articulator in a

moment by means of sealing wax. The cheap kind sold at the grocer's answers perfectly. Soak the models when ready to remove.

An old glove may prevent a burn on your fingers as sealing wax is quite a powerful stimulant.

F. A. GRAHAM, Harbor Springs, Mich.

A Low Fusing Alloy:—An alloy composed of five parts of bismuth, one and one-half parts of cadmium and two parts of tin fuses at so low a temperature that it may be poured into a plaster impression as soon as the impression is removed from the mouth. It produces an accurate die which can be used in the hydro-swage, or with shot or corn meal as a counter-die.

W. A. BUSCHO, Chicago.

To Stop Mouth Breathing:—Take an impression of the labial and buccal surfaces of the teeth and gums with the teeth closed in their proper relation. Make a plaster model and fill in so that you have conformity of the arches. Take Hercules rubber and make guard to fit labial and buccal outline of arches. This is to be worn in the mouth over night, with a chin and skull cap in position to keep the jaws together.

M.

Holding the Rubber Dam in Place:—After reading in the Practical Hints department of the REVIEW the different methods of holding the rubber dam in place I would like to give my method, and perhaps it might be of assistance to some of the readers. After passing the ligature around the last tooth which the dam involves, I place a small pellet of cotton under the ligature and then draw it tight and tie it. It will be effectual in keeping the rubber from slipping. Having practiced this method for a year and a half I feel confident of its success, for I have not had a case yet where it failed.

W. J. HEMPHILL, Dexter, Iowa.

Pressure Anæsthesia:—The REVIEW for January publishes a paper by Dr. C. E. Bartholf, Union Grove, Wis., on the subject of painless removal of the dental pulp with cocaine (pressure anæsthesia). The dental journals are, and have been, giving much space to the subject of pressure anæsthesia, for the painless removal

of the dental pulp when for some good and sufficient reason it seems best to do so. This procedure is not always painless while the pressure is being applied. A method much more satisfactory to me and doubtless to the patient is that suggested by Dr. Clyde Davis, I believe. Take one No. 150 P. D. & Co. 6-grain cocaine tablet and dissolve in two or three drops of adrenalin chlorid, saturate a pledget of cotton and apply to exposed pulp. Cover this lightly with cotton and leave about twenty minutes, when, as a rule, the pulp may be removed with no pain to the patient or the operator. There are very few cases that can not be finished at the same sitting.

F. J. RUGGLES, Nevada, Iowa.

Lintine or Cottonoid:—For many years this substance has taken the place of cotton and more than that with me. It is neat, clean, aseptic, and is convenient to use. I keep it cut up in two sizes, one about one and three-fourths and one about three inches square. The smaller pieces are often of service instead of cotton rolls for holding back saliva in short operations. I always keep one laid out and ready for absorbing excess of any medicament one may be carrying on fiber or spunk with pliers. It is also neat for holding said bits of medicated fiber or spunk for second use. The large pieces are good for long fibers, for strips which are thin, tough and continuous for dressing down interproximal amalgam fillings; also smooth side up on the bracket for laying instruments, chisels, excavators and scalors upon after use, pending their removal for cleansing. They are satisfactory for patient and operator to hold the lip while removing tartar or treating the gums, being quite as good as antiseptic napkins for this purpose.

GARRETT NEWKIRK, Los Angeles, Calif.

Filling Labial Cavities in Upper Incisors With Gold—Prepare the cavity without adjusting dam or ligature, employing a stream of warm water or blast of air for removing the chips. Avoid laceration of gum even when it overhangs cavity margin. Stop ooze of blood or serum by means of a stream of very warm water followed by application of adrenalin chloride. Place an absorbent cotton roll under the upper lip, and the edge of a napkin under the teeth. Dry the cavity and surroundings with warm air and fill the greater part

of the cavity with gold very slightly annealed. Large pellets may be used at the cervical margin to prevent moisture which may ooze. Use hand pressure and finish the surface not covered by gum with annealed gold. Burnish the filling well and it will be found that the unannealed gold under the gum, though dense, will finish easily.

These fillings, being exposed neither to strain or pressure, do not require much cohesion of the gold. Even a little moisture on the first pellets will not seriously damage the filling if the cavity is properly prepared.

By this method unnecessary cruelty to the patient during the operation and injury to gum festoons by the clamp or ligature is avoided, also a clearer field and economy of time is secured for the operator. Except where clearly indicated avoid separators, clamps, ligatures and rubber dam in any operation.

W. C. GOWAN, Creemore, Ont.

DOMESTIC CORRESPONDENCE.

JUSTICE TO WHOM JUSTICE IS DUE.

EDITOR DENTAL REVIEW:

My Dear Sir—I am somewhat embarrassed as to how to properly approach the subject of the above with the possession of the facts that are before me.

At the last so-called World's International Dental Congress a great effort was made to inspire the production of as many as possible very high-grade papers, and the enthusiasm of the profession was enlisted to produce papers which would be of moment in the advance in professional standing. As I understand, an eminent committee was named to take under advisement and pass upon the various papers presented, and among those who contributed papers were some of the most eminent men in our professional specialty.

The report of the committee, as given, was that the first prize should be awarded to Dr. Miller, of Berlin. Possibly no one will question the justice of this; still, to my mind, it is somewhat open to question, but, admitting the judgment of the committee to be infallible, the second and third prizes of first honorable, and second honorable, mention were accorded to one of the studious and industrious men of our city, Dr. Eugene S. Talbot.

I have failed to see in the professional press of our city any extended notice or complimentary allusions to this fact of this great honor being accorded to one of our own number. I am chagrined at this, but am not as surprised as I would be if I did not know the ways of the profession here, at least, and that is that plaudits, applause and complimentary allusions are regularly made to those who, by political intrigue and without personal intellectual attainment, attain high positions in societies and congresses, but when one of our number modestly and quietly, and by persevering and continued study and investigation, places himself in the front rank of the profession, our professional press seems to be asleep in so far as any compliments to the honored one are concerned.

It seems as though this, in a large way, leads to the impression among the reasoning ones of the profession that eminence and plaudits can be obtained by political intrigue rather than by honest and patient study and investigation, and that our editorials and papers urging investigation and study in the profession are not meant to be taken under advisement with any force of meaning.

I may say in this matter that this letter is written absolutely without the knowledge of the person spoken of, but I feel as though this earned eminence should at least be shown to the world as recognized by at least one of the humble believers in advanced education.

Yours for intellectual fairness and progress,

A. E. BALDWIN, M. D., LL. B., D. D. S.

January 23, 1905.

ABANDONED METHODS.

EDITOR DENTAL REVIEW:

History repeats itself in dentistry as well as in other matters, but not always to advantage. I have been reminded of this recently by a demonstration in continuous gum work. It was introduced as an improvement over the usual methods by leaving the palatal portion of the plate uncovered by porcelain. And, instead of using the continuous gum teeth, which are so perfectly adapted to this work, common plate teeth were used and backed, practically as in ordinary gold work. Fifty-three years ago last November I purchased of John Allen a license to use his continuous gum system. As there were no continuous gum teeth in those days, we used the or-

dinary plate teeth, backed and soldered them as usual, and then applied the porcelain to the lingual sides and not over the palatal surface, precisely as now done in the above-mentioned method.

Two years later I discarded this method and covered the palatal surface and afterward used the newly introduced continuous gum teeth.

Now there is no reason why the palatal surface should not be covered and every reason why it should be. It restores the natural configuration of the palate, being so much more agreeable to the tongue and in aid of speech, and also more artistic and finished. Then often in shallow jaws the patient shows the plate of rubber or metal when laughing or singing, but by this method that is obviated. These should be days of progression, not of retrogression.

L. P. HASKELL.

NEW YORK LETTER.

NEW YORK, January 31, 1905.

MY DEAR MR. EDITOR:

The January meeting of the Institute of Stomatology was held at the offices of Drs. Kimball & Parker, 27 West Thirty-eighth street, instead of at the Chelsea, as usually. This was done in order that the members might have an opportunity to inspect the building, which has been recently remodeled throughout and is now entirely given up to dental offices. Another good reason, probably, was the desire of the newly elected president, Dr. Charles Otis Kimball, to entertain the Society, as was nicely done, after the meeting adjourned to the fourth floor, where a fine collation was spread. It was a stormy night and comparatively few attended, but those who were present were amply repaid.

Under incidents of office practice, etc., Dr. Henry Gillette presented a little retractor for holding the dam back when filling large labial cavities, and showed how readily a mirror could be attached to it and held in proper position to throw light into the cavity.

Dr. J. Adams Bishop sent as a curio a set of teeth imbedded in an oyster shell, as it had been dug up from the Sound.

George Van Ingen Brown, M. D., D. D. S., of Milwaukee, Wis., then delivered an address entitled "A Demonstration of the Vital

Significance of Stomatology," which was profusely illustrated by the stereopticon.

Dr. Brown said he preferred to head his paper as "The Significance of Oral Disease" and to speak of its bearing on longevity. He described some cases occurring in his hospital practice, illustrating from time to time with the stereopticon. From these, as a close to his illustrations, he presented pictures of some of his work along the lines of hair-lip and cleft-palate.

In the discussion which followed, the "true inwardness" of his paper as relating to the *significance* of oral disease was lost sight of and became a sort of heart-to-heart talk with the doctor concerning his surgical work for deformities of the mouth, etc., during which many questions were asked and in due time answered.

The regular meeting of the Second District Dental Society for January was held at the King's County Medical Society, Library building, 1313 Bedford avenue, Brooklyn, on Monday, January 9th.

Dr. R. H. Hofheinz, of Rochester, N. Y., was the essayist of the evening. He presented a terse and telling paper on "The Relative Adaptability and Comparative Permanency of the Gold Filling and the Porcelain Inlay." He said that according to *some* operators he who in this day uses gold deserves only pity. While he believes porcelain has its advantages, he still thinks a good gold filling will outlast a good porcelain inlay. Porcelain certainly has properties gold has not. In proximal cavities in incisors which will not show he prefers soft gold filling. He ably divided the various cavities which the dentist meets into several groups, and then in detail showed when and where he thought gold was indicated, and *vice versa*; said that porcelain had undoubtedly created a new era, but we can not discard gold.

He uses gold on labial faces of teeth where the cavities are small enough for esthetic conscience, but nowhere would he rather place porcelain than on the same labial surfaces, though certain of these cavities need gold for permanency. He uses porcelain for partial incisive edge cavities, but gold for the entire incisive edge. Porcelain or gold can be used with equal facility in buccal cavities of molars. Occlusal cavities of bicuspsids or molars are more permanently filled with gold. Secretions of the mouth are liable to disintegrate cement about fillings. A practice of his has been to fill a

cavity with gold and remove some of the gold that shows, replacing it with porcelain. This can also sometimes be done with an old gold filling. Extremely large fillings are better made of porcelain. In some posterior cavities he does not prepare the gingival margins, especially if they extend beneath the gum, until after the preparation of the porcelain; then the margins are shaped, soft amalgam placed against them, then the porcelain forced into it. Cement is used at base and other margins of the cavity.

Gold and porcelain must properly supplement each other, for gold has been the safest for years. Porcelain may be some day.

Dr. E. T. Darby, of Philadelphia, was to have taken part in the discussion, but illness prevented. He sent a letter to the Society, which was read by Dr. Jarvie. In it he emphasized all that Dr. Hofheinz contended for—conservatism—and seemed to go just a step further.

Dr. Gould, the president, in introducing the next speaker said that he did fairly eat porcelain.

Dr. Joseph Head, although of Philadelphia, contradicts the usual impression of the Philadelphian. He has been at the game so long and is naturally possessed of so much more experience than many of us on this porcelain question that his remarks are well worth giving serious consideration. He said that some complaint had been made that porcelain fillings come out. That is true, and patients will probably have to eat porcelain, but haven't some of them taken the gold cure? Some good-natured bantering was indulged in by the essayist and discussionist. Dr. Head said that he differed with Dr. Hofheinz on forty-nine points.

Dr. Hofheinz remarked that that was more than he had enumerated. Ridiculing the idea of a permanent gold filling, Dr. Head then asked: "Which would you rather have—a temporary permanent filling or a permanent temporary filling?"

Dr. Miller says, or agrees, that porcelain at the gingival margin absolutely stops decay. Sometimes porcelain breaks—fractures at the margins. Sometimes enamel does the same. Porcelain will retard if not altogether stop erosion at the necks of teeth. The cement is not often at fault. If the edges chip, prepare and fill the space with gold or amalgam. "But, really, there are so many good points in favor of each material that when I think of either I am in

doubt." Many patients would rather be temporarily beautiful than permanently ugly.

Dr. John I. Hart, of New York, was called upon to say something in discussion. He said he was lost in admiration of the paper of the evening. Conservatism begets conservatism. Gold is the king-pin and porcelain a most satisfactory adjunct. He believes the ratio of failures to be about one in a hundred with gold and probably ten in a hundred with porcelain. It is not the exception, but the rule, for gold to save teeth twenty to thirty years. We can not afford to take chances with porcelain. The only disadvantage of gold is its lack of harmony.

Dr. R. Ottolengui, of New York, had this to say: There are two factors for failure of retention of porcelain in cavities. One is direction of stress. (I believe he said the other was faulty manipulation.) In describing his method of making corners stay he drafted on the board. By obtaining broad seats lingually, cutting away tissue, he believes his porcelain restorations will be permanent. Dr. Ottolengui spoke of some excellent results recently obtained by him in bleaching teeth with chloride of lime and acetic acid, and then, after washing the cavity thoroughly, filling it with the whitest cement procurable—oxy-chloride of lime or an oxy-phosphate. Having previously prepared a porcelain plug to fill the cavity, insert that. One of the gentlemen who followed in the discussion took exception to setting the filling with oxy-chloride cement, saying the cement would certainly disintegrate in a short time.

Dr. Gaylord, of New Haven, indorsed Dr. Hofheinz' paper as the most satisfactory he ever listened to.

Dr. M. L. Rhein, of New York, expressed himself as being disappointed with the discussion. He agreed in the main with Dr. Hart, emphatically disagreeing with the essayist regarding the washing out of cement in labial cavities. He also named another position where porcelain was really indicated—the disto-occlusal surface of third molars.

Dr. F. T. Van Woert, of Brooklyn, thought that in our enthusiasm we might have overstepped the bounds of conservatism. If we follow in the main what Dr. Hofheinz has said we will be nearer right. Corners can be put on the six anterior teeth that will stay—No. 36 gold plate used for the matrix, then a porcelain filling baked

therein. Afterward the gold stripped from center of back of filling, leaving that at edges. Cement this in place, then burnish the gold tightly to edges before the cement hardens. Subsequently finish with disks or stones and you have a filling with no cement line, but a very thin line of gold, which is not objectionable in bicuspid and molars.

Dr. Jarvie, of Brooklyn, said that we are expert in gold work, but novices in porcelain. The significant thing is, porcelain-workers get to use the material more extensively and, they think, with greater advantages. Their opinion is surely worth something.

Dr. Hofheinz, in closing the discussion, said he would rather put in a poor porcelain than a poor gold filling. In answering Dr. Head's criticism on erosion, he said it was a coincidence his having stopped it. The fact that Dr. Head advocates placing of gold about the margins of chipped fillings and tooth structure is evidence that gold protects enamel prisms better than porcelain.

The New York Institute of Dental Technique held its annual meeting at the Chelsea, in West Twenty-third street, Tuesday evening, January 24th, and none but members were present.

The officers elected for the coming year were F. C. Brush, president; C. M. Hoblitzell, vice-president; E. D. Reed, secretary and treasurer.

F. C. Brush presented an idea for a simple matrix and exhibited the models. These will be made by the Manhattan Dental Company, but the idea is given to the profession.

Dr. E. W. Harlan read a short paper on the making of accurately-fitting seamless caps for Richmond crowns.

Dr. J. H. Tuttle demonstrated his method of building up porcelain crowns with the prosthodontic body.

Dr. Mehlig exhibited a very ingenious device for dividing the drawers of an instrument cabinet.

The midwinter meeting of the officers of the New Jersey State Dental Society was held Saturday, January 28th, at Princeton, N. J., with the president of the Society. This is a regular thing with this organization, and at this time the work for the annual meeting in July is mapped out, various committees appointed and the elaborate machinery for their great midsummer meeting is put in motion. It has come to be "the thing" for the president to close

the day with a dinner to the officers and those whom he may choose to invite as his guests. About twenty-five sat down to this banquet in the Nassau Hotel, one of the old landmarks of Princeton, and had a very enjoyable time, listening, after the banquet, to speeches from several of the guests, especially Prof. W. B. Scott, of the University of New Jersey (otherwise Princeton College), Dr. S. H. Guilford, of Philadelphia, and Dr. C. S. Stockton, who is lovingly called the "dean" of the dental profession of New Jersey.

THE BOROUGHs.

FOREIGN CORRESPONDENCE.

DR. EDWARD H. ANGLE'S CRITICISM OF DR. ROBERT DUNCAN M'BRIDE.

The only excuse for ever referring to this criticism is that there may be readers of THE DENTAL REVIEW who are not interested in orthodontia and may not have read Dr. McBride's paper. He was requested to address the American Dental Society of Europe upon "The Modern Developments in Orthodontia" and did so, largely in thought and probably also somewhat in such phrase as Dr. Angle has himself made the common expression of enlightened orthodontists everywhere. He illustrated the teaching of the modern school of orthodontists by models of his own cases, which bear, as is the case with the work of every able man, the marks of his own individuality. But it was perfectly plain to his audience that he was laying before them, not the record of his own discoveries, but the results of the labors of the great masters of orthodontia, with especial reference to the distinguished Dr. Angle.

I am sure that I am speaking for every member of the American Dental Society of Europe in saying that if we feel a certain regret that Dr. Angle, doubtless in a moment of nervous irritability, such as all strenuous workers in the cause of humanity are liable to, has done us the injustice of supposing that we are unfamiliar with, or indifferent to, his memorable achievements, or could possibly perpetrate or connive at any action inconsistent with professional or personal rectitude, that regret is immediately swallowed up and forgotten in the memory of the great debt we owe to him.

N. S. JENKINS.

DRESDEN, January 14, 1905.

MEMORANDA.

MINNESOTA STATE DENTAL ASSOCIATION.

The twenty-second annual meeting of the Minnesota State Dental Association will be held in Minneapolis on June 1, 2, and 3, 1905.

GEORGE S. TODD, *Sec'y.*

GOLDEN ANNIVERSARY.

On February 21, 1905, a golden anniversary banquet will be tendered by the dentists of New Orleans to Dr. George J. Friedrichs, who graduated in dentistry February 21, 1855.

L. D. ARCHINARD,

For Committee of Arrangements.

READING DENTAL SOCIETY.

The seventh annual meeting of the Reading Dental Society was held January 5, 1905, at Reading, Pa., and elected the following officers for the ensuing year: President, Dr. Charles Grim; vice-president, Dr. C. R. Scholl; secretary, Dr. George S. Schlegel; treasurer, Dr. J. T. Bair; executive committee, Dr. W. H. Scholl, Dr. Otto J. Specker and Dr. S. W. Bohn.

GEORGE S. SCHLEGEL, *Sec'y.*

IOWA STATE DENTAL SOCIETY.

The forty-third annual meeting of the Iowa State Dental Society will be held at Des Moines, May 2, 3 and 4, 1905.

A program of more than usual interest is being prepared and we extend a cordial invitation to the dental profession to attend the meeting and help to make it the best meeting in the history of the society.

C. W. BRUNER, *Sec'y.*

THE NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

The annual meeting of the National Association of Dental Examiners will be held at Buffalo, N. Y., commencing 10 a. m., July 24th, and continuing until adjournment.

The hotel and assembly rooms for holding session will be announced later. Arrangements for members in the East have already been made with the Lackawanna Railroad for reduced excursion rates on fast de luxe trains leaving New York at 10 a. m., 6:10 p. m., 8:45 p. m. and 2 p. m.

CHARLES A. MEEKER, D. D. S., *Sec'y.*

29 Fulton Street, Newark, N. J.

SIXTIETH ANNIVERSARY CELEBRATION.

The ninth annual dinner of the Qunehtacut Dental Club was held at the Heublein Hotel, Hartford, Conn., Saturday evening, December 10, 1904, in honor of the sixtieth anniversary of the discovery of anæsthesia by Dr. Horace Wells. The president, Dr. Alfred C. Fones, of Bridgeport, was in the chair. Twenty-five were present, including as guests the governor of Connecticut, the mayor of Hartford and Charles T. Wells, Esq., son of Horace Wells.

The following officers were elected: President, Dr. George O. McLean, Hartford; vice-president, Dr. Richard W. Browne, New London; secretary and treasurer, Charles McManus, Hartford.

JOINT MEETING—THE SOUTHERN BRANCH OF THE NATIONAL DENTAL ASSOCIATION
MEETS WITH THE TENNESSEE STATE DENTAL ASSOCIATION AT
MEMPHIS, TENN., FEBRUARY 21-24, 1905.

Below is a partial list of the papers and clinics: Dr. Jules J. Sarrazin, New Orleans, La., chairman, report. Dr. S. D. Brabson, Knoxville, Tenn., "Prophylaxis in Dentistry," discussion opened by Dr. N. N. Vann, Atalla, Ala., followed by Dr. Robin Adair. Dr. Robin Adair, Atlanta, Ga., "A Successful Introduction of Oral Prophylaxis Treatment into Practice," Discussion opened by Dr. N. N. Vann, Atalla, Ala., followed by Dr. B. D. Brabson, Knoxville, Tenn. Dr. R. Boyd Bayle, chairman, report. Dr. August F.

Sonntag, chairman, report. Dr. M. F. Fennily, Washington, D. C., report. Dr. E. P. Beadles, Danville, Va., "A Few Points in Inlay Work." Dr. S. D. Ronebo, Marietta, Ga., "Gold and Tin and Amalgam and Gold at Cervical Margin as an Excellent Material for Saving Teeth." Dr. T. T. Moore, Columbia, S. C., "Insulating Deep Sealed Cavities." Dr. B. Holly Smith, Baltimore, Md., title not given. Dr. J. E. Chase, Ocala, Fla., chairman, report. Dr. George S. Vann, Gadsden, Ala., chairman, report. Dr. F. M. Milam, Little Rock, Ark., "Orthodontia." Dr. W. E. Grant, Louisville, Ky., "Orthodontia, Surgical and Mechanical." Dr. J. Lewis Walker, Norfolk, Va., "Orthodontia, Successes and Failures." Dr. H. H. Johnson, Macon, Ga., chairman, report. Dr. R. K. Luckie, Holly Springs, Miss., chairman, report. Dr. George W. Dick, Sumter, S. C., chairman, report. Dr. Benton Lee Thorpe, St. Louis, Mo., "The Masters of Early Dentistry," with lantern-slide pictures. Dr. Arthur Hynes Fleming, Louisville, N. C., "The Problem of Education." Dr. W. G. Mason, Tampa, Fla., "Dental Education." Dr. A. W. Meyer, Chattanooga, Tenn., "Diseases of the Antrum, Practical Case." Dr. J. C. Bogue, Harriman, Tenn., "The Education of Present and Prospective Dental Patients."

Clinics.—Dr. Thomas P. Hinman, chairman, Atlanta, Ga. Dr. J. L. Newborn, Memphis, Tenn. Dr. Truman W. Brophy, Chicago, Ill., "Surgical Operation." Dr. F. E. Roach, "Showing New Attachment for Partial Plate and Removable Bridge." Dr. D. O. M. LeCron, St. Louis, Mo., "Method of Ascertaining True Fusing of Porcelain." Dr. Burton Lee Thorpe, St. Louis, Mo., title not given. Dr. L. M. Cowardin, Richmond, Va., "Appliance for Correction of Cross Teeth (Orthodontia)." Dr. F. L. Wood, Roanoke, Va., title not given. Dr. T. T. Moore, Columbia, S. C., "Manner of Insulating Deep Seated Cavities." Dr. A. M. Jackson, Macon, Ga., title not given. Dr. Joseph Broughton, Atlanta, Ga., "Articulated Piece of Bridge Work." Dr. George A. Loque, New Orleans, La., "A Full Porcelain Crown and Bridge Eliminating All Baking." Dr. W. O. Talbot, New Orleans, La., "Taking of Plaster Impressions and Making of Casts for Orthodontia Work." Dr. W. M. Slack, Memphis, Tenn., "Demonstrating Use of Vernons Gold." Dr. J. A. Gardner, Memphis, Tenn., "Cavity Preparation Extension for Prevention." Dr. J. W. Peete, Memphis, Tenn., "Orthodontia." Dr. C. E. Hines, Memphis, Tenn., "Porcelain Inlay." Dr. J. W. Hunt, Memphis, Tenn., "Gold Inlay in Frail Incisors." Dr. C. H. Taylor, Memphis, Tenn., "Porcelain Without Platinum Base." Dr. W. W. Brooks, Memphis, Tenn., "Instrumentation Phagadenic Pericementitis." Dr. C. A. Tavel, Memphis, Tenn., "Combination Filling Finished with Vernous Gold." Dr. Eugene A. Johnson, "Exhibition of Somnoform for Extracting Teeth and Minor Surgical Operations." Dr. W. D. Gaither, "Method of Attaching Lost Incisor to Incisor or Cuspid by Means of Doweled Gold Inlay." Dr. H. M. Prettyman, Covington, Tenn., "Gold Bridge Demonstrating Original Method of Securing Perfect Acclusion." Dr. J. L. Newborn, Memphis, Tenn., "Abbey's Soft Foil Filling." Dr. Walter White, "Dentin Injection with Cocaine and Mounting Davis Crown." Dr. F. E. Buck, Jacksonville, Fla., "Table Clinic Showing New Flask and Rubber Warmer and Method of Applying Tin Foil to Rubber." Dr. Richards, Knoxville, Tenn., "Practical Demonstration of Inlay—Using a New Apparatus." Dr. J. C. Bogue, Harriman, Tenn., "Capon Porcelain Front Crown."

From the interest manifested this promises to be the largest meeting in the history of the two associations. The railroads have given a rate of one and one-third fare on the certificate plan. The meeting will be held at the Hotel Cayoso; rooms, \$1.50 and \$2.00 per day, European plan. Accommodations can be had at other hotels on the American plan at \$2.00 per day. The exhibits of the various supply houses will be exceptionally attractive, embracing everything of interest to the dental profession.

CHARLES A. BLAND,
Chairman Programme Committee.
Charlotte, N. C.

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No. 3

SYMPTOMS INCIDENT TO DENTITION.*

BY WALTER R. RAMSEY, M. D., ST. PAUL, MINN.

Instructor in Diseases of Children, University of Minnesota; Visiting Physician to City and County Hospital and Free Dispensary.

Until recent years many of the ills of infancy, and especially those involving the digestive tract and nervous system, were attributed by the profession as well as by the laity to dentition.

Within the past few years scientific research has demonstrated that many of the symptoms which were formerly attributed to dentition, to be due to bacteria, which gained entrance to the alimentary tract by means of infected milk, resulting often from dirty utensils. Since a more exact knowledge of the cause of these affections has gradually spread from the profession to the laity, the cholera infantum of a few years ago has practically disappeared from private practice, and even in the densely populated parts of our great cities and in asylums, where from 20 to 50 per cent of all infants under one year died during the hot summer months, the mortality is being rapidly diminished.

The result of the scientific crusade of the past few years has been to attribute all symptoms of a pathological character to some form of infection, and many of the leading observers have said during this reactionary period that dentition, being a physiological process, is attended by no symptoms whatever and that those appearing at that time were purely a coincidence and due to other causes.

This radical stand is not now taken by the most observing of the profession, for, although dentition normally is a physiological process, there is no doubt that in a certain percentage of cases

*Read before the Minnesota State Dental Association, June, 1904.

symptoms of a varying degree of significance result. One authority believes from his own observation that about one-half of healthy children have no symptoms, and the remainder have some, of a varying degree of intensity.

It is most essential that the normal process of eruption of the teeth be kept fully in mind.

At birth the rudimentary teeth are located in the alveolar process, so that the mucous membrane is smooth and of a uniform color. At its root each tooth is connected with a branch of the dental nerve. As the tooth begins to develop it projects itself in the direction of least resistance. The pressure from below upon the gum soon results in its atrophy and the crown of the tooth appears on the free surface of the mucous membrane.

It is probable, as has already been stated, that this process is accompanied by symptoms in about one-half of all cases. The symptoms may be divided into three classes:

1. Symptoms resulting from a well-defined local inflammation.
2. Reflex symptoms resulting, apparently, from local inflammation.
3. Reflex symptoms where there is no apparent local inflammation.

In the neurotic child, especially, symptoms of a reflex character are much exaggerated.

The general symptoms of difficult dentition are as follows: The child is restless and fretful, there is usually an excessive flow of saliva; occasionally this may be diminished; the child cries, often refuses to nurse, sticks its fingers in its mouth and likes to have its gums pressed upon, or seems relieved when allowed to bite upon some hard substance. In other cases the child screams if an attempt be made to even examine the gums, and it avoids even the slightest pressure. At night it is restless, sleeps uneasily, frequently waking or crying out in its sleep, and even beating its head against the sides of the crib; there may be convulsions. The skin is often hot and dry and the temperature varies from 100 to 101° F. in mild cases and up to 105° in severe ones.

There may be mild or even quite severe diarrhœa, or the bowels may be persistently constipated. The tongue is usually coated. If

there is not much local inflammation, the mucous membrane may be dry and reddened, even though there be a copious flow of mucus from the salivary glands. An examination of the mouth may or may not reveal anything to account for the symptoms.

In a certain percentage of the cases a circumscribed, whitish, shiny area of the mucous membrane will be noticed stretched over the crown of the underlying tooth. This area is raised above the surrounding mucous membrane, and around the base there is an area of inflammation. Such a condition is due to the fact that atrophy has not taken place as rapidly as it should, so that the mucous membrane is subjected to pressure, resulting in an amount of pain and other reflex disturbance, depending upon the amount of tension, the constitutional makeup of the infant and other factors determined by environment.

Frequently no indication of local disturbance can be found, and nothing except, perhaps, the excessive flow of saliva and the general symptoms already described to indicate the presence of some disturbing factor.

Before any general symptoms should be attributed to dentition, a most exhaustive search should be made for other causes, as in the past and even now serious conditions are frequently overlooked on account of the too-often-resorted-to explanation of difficult dentition.

Eliminating all other possibilities, then we are frequently forced to make a diagnosis by exclusion, and from the fact that the symptoms promptly disappear as soon as the tooth appears on the free surface of the mucous membrane.

How shall we explain these severe symptoms which occur with dentition?

As we know, the constitutional makeup of children differs as it does in adults. The highly neurotic child will be thrown into a fit of convulsions from a slight attack of indigestion which would not at all disturb his more phlegmatic brother.

We know that the secretion of the glands depends upon their nerve supply; and whether they secrete the normal amount, less or more, depends upon the inhibitory or acceleratory action of the nerve supply. Thus a diarrhœa will be produced by an excessive action of the intestinal glands, a constipation by a diminished action.

More severe intestinal affections may, and undoubtedly frequently are, produced by the lack of proper secretion in the intestinal tract, thus permitting decomposition of the intestinal contents to occur and an inflammation of the mucous membrane to result therefrom, with the characteristic symptoms of an intestinal infection. The excessive secretion of the salivary glands is undoubtedly due to a direct stimulation of the nerves supplying these glands, the tooth acting as a foreign body in the mouth, which, as we know, at once excites a flow of saliva. The swallowing of this large amount of saliva may also be a factor in producing the diarrhœa.

It might be mentioned here that the saliva of the infant has distinctly diastatic action, which continues after it has reached the stomach for from one-half to two hours, a fact which, as Jacobi suggests, might be used to advantage when there is fever and the Hcl consequently reduced.

The frequency with which ear symptoms are found in conjunction with teething has led to careful investigation as to the cause.

I have recently seen a child which gave marked evidence of having pain in the ear. Upon examination the drum was found much inflamed. This condition persisted for a week, the child suffering much pain when not relieved by local treatments, but promptly ceased when a tooth, which gave no evidence of any local pressure, came through. Such cases are not uncommon. Professor Rotch reports one case in which a muco-purulent discharge occurred as a result of an acute inflammation of the tympanum. This discharge promptly ceased when a tooth, which had given no local evidence of trouble, came through. The discharge was reëstablished when the next tooth was in process of eruption and ceased again when the tooth had pierced the mucous membrane.

That this inflammation is directly dependent upon dentition there has been sufficient attested evidence, but how can it be explained? Woakes has shown that an intimate relation exists through the medium of the otic ganglion, between the nerve supplying the teeth and that presiding over the blood supply to the tympanum. Rotch has drawn a diagram showing how pressure upon the dental nerve results in an increased blood supply to the drum, resulting often in an acute inflammation, with the production of much pain.

There is probably no means by which we can determine, in a given case, whether dentition shall be easy or difficult. However, by a proper knowledge of the conditions much can be done when symptoms first appear which will save these little ones great pain and discomfort and even, in many cases, conditions which would otherwise result in permanent injury.

Treatment: It has been believed in the past, and is even now believed by too many of both the dental and medical professions, that whenever symptoms arise from teething that gum-lancing must be at once resorted to. This is a serious mistake, for, although there are well-selected cases in which lancing the gum gives immediate and permanent relief, there are many in which it does no good and may do actual harm. When, on examination, the tooth is seen to be projecting above the jaw, with the mucous membrane over the crown, white and shiny, and around the base an area of inflammation, cutting down upon the crown will give great relief, as the crown of the tooth will often remain in view as a result of the retraction of the tense mucous membrane. To lance a gum where there is no evidence of tension is not only useless, but opens up a channel for infection and results in a cicatrix which may afterward transform a simple into a difficult eruption.

The symptoms referred to the ear must be treated locally. A stream of hot water, temperature of 110° F., directed into the ear will often result in a cessation of the pain; or a few drops of an atropine solution, or, better still, a 1/5,000 solution of adrenalin chloride, will result in a depletion of the blood supply to the drum, which usually is the seat of pain. Where the child is of the neurotic type, and no symptoms other than nervous can be detected, small doses of sod. bromide, put up in simple syrup, or small doses of phenacetine, reinforced by citrate of caffein, will give marked relief. On general principles coal-tar products should be used only with great care, on account of their depressing effect upon the circulation. When convulsions occur the child should at once be plunged into a hot bath, the head meanwhile being kept cool by a cold sponge placed on the head, or, better still, around the neck; in addition a few drops of chloroform may be given (by inhalation) and other sedative drugs designed to allay the nervous irritability administered. Where there are intestinal symptoms, the greatest care

of the diet should be exercised, the stools should be watched daily and usually a markedly restricted diet prescribed. Where there is fever from reflex origin, a tepid or even a cold sponge, followed by a vigorous rub, results in a lowering of the temperature and acts as a tonic to the unstable nervous system, so that the child will frequently fall into a quiet sleep and remain so for hours.

AUTHORITIES CONSULTED:

Jacobi: Therapeutics of Infancy and Childhood.
Baginsky: Lehr Buch der Kinderkrankheiten.
Rotch: Pediatrics.
Holt: Infancy and Childhood.
Reference Handbook Medical Sciences, etc.

IMPRESSION MATERIALS AND METHODS OF TAKING IMPRESSIONS.*

BY O. A. WEISS, D. D. S., MINNEAPOLIS, MINN.

It is at the request of your executive that I present to you this subject. Why this subject was assigned to me I am somewhat at a loss to understand, as it is one of the oldest subjects in prosthetic dentistry, one upon which probably as much has been said as can well be done. Possibly it was with a view of ascertaining something new and valuable, or it may have been in consequence of difficulties often encountered in securing satisfactory retention of artificial dentures in the mouth, which could be accounted for in no other way than that of the impression. I do not feel that I have anything new to offer you, but perhaps some features of this subject may be presented in a new light to some of you, which may be of aid.

I have therefore selected only certain phases of this subject which experience has shown me to give rise to trouble, and which it occurred to me might be of interest to you. Artificial dentures are not infrequently faulty or unsuccessful owing to improper choice or use of the impression materials. My observations lead me to believe that an erroneous understanding is quite prevalent regarding the choice of an impression material in the construction of artificial dentures. Our impression materials at present are practically lim-

*[†]Read before the Minnesota State Dental Association, June, 1904.

ited to two substances, viz., plaster of Paris and modeling compound, the choice of which is usually determined by whether it be a full or partial case, and the age and disposition of the patient—plaster being generally chosen for all full dentures and modeling compound for partial cases.

Plaster is usually preferred as an impression material because it yields the most accurate impression and is used in all full cases because little or no difficulty is encountered in removing it from the mouth, while in partial cases it is usually avoided owing to the difficulties often encountered in its removal.

The choice of an impression material *should always be determined by the character of the mouth and the end to be attained, rather than the perfection with which the exact form of the mouth may be copied, or the ease with which the impression may be removed from the mouth.* This is particularly applicable to the upper jaw where the alveolar ridge or a portion of it is soft or flabby, especially in the anterior part of the mouth, as is frequently the case where an upper denture has previously been worn with only the natural anterior lower teeth for articulation. In such cases a firmer or harder impression material is required to compress such soft areas in order to obtain a plate which shall have a *uniformly firm bearing in the mouth.* An accurate impression in such cases will invariably result in an unsuccessful denture. In these cases I prefer modeling compound because I have less difficulty in obtaining the necessary compression of the soft ridge. Some, who are greatly attached to plaster, claim to arrive at the same result by using plaster thickly mixed, and there is no doubt but that this can be so accomplished if the proper mix of plaster is obtained, however, as already stated, I have met with less difficulty in securing the desired compression of the soft ridge by the use of modeling compound.

In taking impressions of such mouths, great care is necessary—whether plaster or modeling compound is used—to secure a *uniform compression* of the ridge, i. e., not to press the ridge out upon the labial side, as is easily done in such cases.

Plaster should be chosen in all full cases where the ridge is of a uniformly firm character.

The impression material to be used in partial cases is a *debat-*

able question. In all cases where the remaining teeth are in good position—where no perceptible undercuts exist nor the teeth perceptibly inclined—and the soft tissues are of a uniformly firm character, plaster is undoubtedly preferable as an impression material. In those cases where the remaining teeth are more or less inclined, where undercuts or dovetail spaces exist, the question becomes debatable. It is claimed by some “the more difficult the case the greater the demand for plaster.” Exceptions to this statement must be taken. In those difficult cases, when a perfect impression has been obtained and a plate made therefrom, such plate can not be placed in position in the mouth until more or less cutting has been done—oftentimes more than is really necessary because it is not always possible to see just where the cutting should be done or just how much should be done—whereupon the plate when finally in position in the mouth does not fit perfectly.

When modeling compound impressions are taken in such cases they of course are imperfect, but if carefully taken they are no more imperfect than the fit of the plate must be in order to permit its being placed in position in the mouth. When a modeling compound impression is removed in a partial case only such distortion about the teeth takes place as is necessary to permit its removal, which is identical with the alteration necessary in a plate made from a perfect impression in order to place such plate in the mouth. In addition to this, however, we usually find a slight distortion of the impression at the gum margins; but this is very easily remedied upon the impression by cutting away the distorted portion which appears as an elevation upon the impression, the impression of the parts contiguous thereto serving as an ample guide in such cutting.

After careful consideration of this question, pro and con, it is my opinion no advantage is gained in the use of plaster impressions in those “difficult partial cases.”

So much for the choice of an impression material.

Regarding methods of taking impressions I could do no more than repeat that with which you are all familiar. There are innumerable methods, some of which are rather unique and which are valuable principally for that alone. As a teacher I feel it necessary to explain to my classes all methods of taking impressions which have any merit, but the methods used by myself are exceedingly few and simple.

For all full cases the first requisite of course is a suitable impression tray designed for an edentulous mouth, and about an eighth or three-sixteenths of an inch larger all round than the parts actually required in the impression.

When plaster is used care is observed not to use an excess whereby the patient is given such discomfort, and wherefrom the great dread by patients arises. I prefer to try a second time or oftener, if necessary, because of deficiency in plaster rather than be compelled to try a second time because of having turned my patient inside out.

When modeling compound is used great care is necessary in holding the tray perfectly steady while it is hardening, which I always assist by applying mouth napkins or cotton balls saturated with ice water.

In taking impressions of the lower jaw a universal defect in the form of impression trays, and which is so frequently overlooked, too, by the dentist, is in the outer rim at the posterior part being turned down toward the ridge entirely too much, and upon the lingual side the rim is usually deficient. This is very easily remedied by turning the outer rim up from the ridge—oftentimes to a horizontal position or even higher—and turning the inner rim downward; this then permits pressing the tray well down into position when taking the impression without impinging upon the gum, and also renders it far less likely for the patient to get the tongue under the edge of the tray; this latter, however, should always be guarded against by requesting the patient to raise the tongue before pressing the impression material completely down into position.

In taking impressions of partial cases, a different type of tray is required. I prefer those designed by Dr. Angle for taking impressions of cases of irregularities of the teeth. Of these trays I prefer those manufactured by the S. S. White Company to any others I have seen, because they are made very thin, which permits bending them, as the case may require, with the fingers, without marring or battering, as results when it is done with pliers or hammer.

In taking plaster impressions for partial dentures an important point to be observed is to have the tray so that it may be easily removed from the plaster while in the mouth. To facilitate this, in addition to the tray being free from dents and having no over-

hanging rim, it should be lightly coated with vaseline upon the inside, and upon the outside of the rim as well. This will be found to be a most excellent aid—especially with old trays—in causing the tray to loosen from the plaster. Trays so treated can be loosened by two or three light blows with the handle of an excavator upon the tray handle.

The next thing to be observed is to allow ample time for the plaster to set thoroughly before attempting removal; by so doing it may be broken with fewer small pieces and sharper lines of fracture.

To aid in breaking the impression, I prefer to cut the impres-

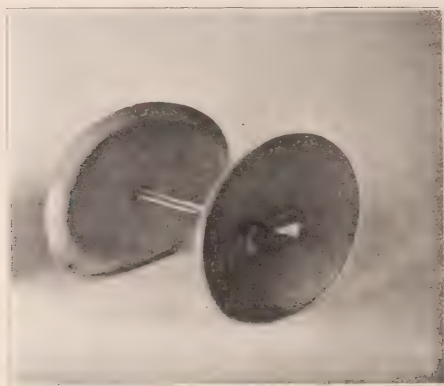


Fig. 1.

Impression matrix for crown and bridge work.

sion with a sickle shaped instrument having a square end so as to cut a narrow groove along the center of the occlusal surfaces of the teeth; the grooves may be cut through to the occlusal surfaces of the teeth or very nearly so, then the broad end of a stiff spatula may be inserted in the groove and a prying motion exerted, whereupon it readily fractures as desired. A similar groove should be cut over the cuspids upon the labial surface, and in lower cases it is often necessary to cut like grooves upon the lingual surface, depending upon the positions of the teeth and the difficulties to be overcome. In all cases the position of the teeth should be carefully observed before placing the impression material in the mouth in order to have a correct idea regarding the cutting of the grooves. After the im-

pression has been removed I prefer to assemble the pieces in the tray; this is usually accomplished with very little trouble if the pieces are carefully washed and lightly brushed with a soft brush—an old worn out prophylactic tooth brush is very good—so as to remove all crumbs of plaster. Unless this is done the little crumbs of plaster formed during the removal of the impression and always adherent to the pieces will, of course, interfere and prevent correct assembling of the pieces in the tray. The pieces of the impression should be immediately washed after removal from the mouth, else the crumbs of plaster become so firmly adherent that it is very difficult to remove them. If the plaster has been allowed to set



Fig. 2.

Impression taken with matrix showing sharpness at gum margins on lingual surfaces of lower molars and bicuspids, and showing also that silk ligature holding the matrix does not interfere with perfectly closing the mouth; the dark spots shown in the occlusal portion of the impression are where the modeling compound was bitten through by the occlusion of the opposing teeth.

thoroughly in the mouth before attempting removal, the pieces after removal will not be injured in the least by washing and light brushing.

I stated at the outset that I had nothing new to offer you upon the subject of impressions. There is one thing which is perhaps new and which I have found of great value in taking impressions for crown and bridge work. It is a form of impression tray, or an impression matrix would perhaps be a better name for it. It is, in fact, a modification of an impression matrix already upon

the market, one with which you are perhaps all familiar and which you know is very limited in its use. This impression matrix which I present to you consists of two curved metal plates connected in the center by the ordinary silk ligature instead of a metal bar, which makes it possible to use in any case no matter how close the bite may be. The silk ligature offers no perceptible obstruction in closing the mouth even though it passes between the occlusal surfaces of the teeth. The two plates of this matrix being held together by a ligature permits them to yield so that there is no danger of impinging upon the gums as frequently occurs with the matrix having the two plates rigidly held by a metal bar.

PORCELAIN AFTER FIFTEEN YEARS.*

BY W. A. CAPON, D. D. S., PHILADELPHIA, PA.

Three years ago, before the New Jersey State Society, I read a paper entitled "Porcelain After Twelve Years," and it is now my privilege to address you on the same subject with an addition of time sufficiently long to cover what is considered by many to be an extended career in itself, for in this added period of three years thousands have decided that porcelain practice has inducements that can not be thrown aside without due consideration.

The subject of porcelain has been so thoroughly covered in the past few years that it is difficult to present sufficient novelties that will make an entire new paper, but it is not my intention to describe technical features or weary you with a repetition of individual methods, but rather to give an experience which is earned through close application and intimate, unremitting connection with this fascinating branch of dentistry which should be of interest to the majority of practitioners. The epoch of porcelain dentistry extends much longer than fifteen years back, but even at that time the subject created only comparatively small interest in the profession, and those who had temerity sufficient to espouse the cause exposed themselves to ridicule and abuse, which was so discouraging that converts were few and their workings secret and careful in an experimenting

*Read before the Minnesota State Dental Association, June, 1904.

degree, but so it is with all radical changes, and such it has been in all professions, and history only repeats itself.

Fifteen years is a short time, and yet it is paradoxical inasmuch that it is a long while. It is only the fifth of the allotted time of man on this sphere, and yet it is of sufficient time to change the destinies of empires and rearrange the political features of the earth in a startling manner. Children become men, cities founded and flourish where once it was unredeemed prairie land or uninhabited rocks and hills.

Startling discoveries are made and become part of our natural life with the avidity that we of the present generation are prone to. But why mention these well-known facts if only for comparison with what has taken place in our profession of dentistry? Its history is one of continual improvements, discoveries and inventions, the application of which has placed dentistry in the foremost ranks of the leading professions, and the most observing laymen are forced to acknowledge that a dentist can not be an inferior individual and keep pace with onward tendency.

The application of porcelain in various forms in the more liberal manner as it is practiced today marks a distinct epoch in dental history, and as such must be regarded by all progressive men, and it is my privilege to convince the unbeliever and, if possible, make him a convert on probation, as it were, and to do this I am compelled to relate personal experiences, because, if they are not always interesting, they are at least truthful, and facts, like figures, are hard to overcome. Therefore allow me, as a stranger from the so-called effete East, to say that I owe my first introduction to this valuable part of dentistry to the influence of a citizen of the beautiful city of Detroit, for in Dr. Land I saw the leader of us all from slavish dentistry to that beautiful esthetic work of the present.

When something has value there is always more than one claimant for its discovery and origin, and such it is in this instance, and many writers on this subject have gone into great detail with the idea of placing the discovery of porcelain, as applied to filling teeth, to any other than this one man that I have mentioned, but I for one am satisfied to give him the credit, because he has justly earned it.

This work always appealed to me, and to practice it success-

fully was my one ambition, but I never dreamed of the obstacles I had to surmount before the success I so eagerly sought was in reality mine and accepted as such by others. How many times had I almost decided to practice as others did and have the finger of derision lowered, if only to give me a breathing spell, but, fortunately, I was blessed with the friendship of a few good, substantial men, among whom I am proud to count the late Dr. Flagg, a man whose foresight and wisdom had enabled others as well as himself to foretell that plastic dentistry could not be overthrown, and he was pleased to call this part a branch of plastic work. When I was discouraged he would say, "Stick to it, my boy, for you are on the right track," and, thus endowed with some of his enthusiasm, I would again plod along, invigorated by the fact that I was sustained by a man of wisdom and kindly determination; and friends, what has been the result? Almost fifteen years afterward I am able to demonstrate that porcelain applied to every-day operations is practical from every point of view and that thousands upon thousands of teeth are saved in a manner most pleasing and acceptable to all, and, best of all, thousands of dentists are helping to do it in a like manner.

When I first did this work it was difficult to get a patient to allow its insertion, unless a substitute was guaranteed in case of failure, but now the patients demand it, and to that fact is due that many dentists are adopting its use, for a progressive dentist can not afford to be behind his colleague or his neighbor, and, fortunate for him, his patients will not allow him. However, it is comparatively easy for him to get acquainted with the work compared with what it used to be, and to make this fact clear I will divide this part of my paper into what it was, what it is and what it will be.

Going back fifteen or eighteen years ago is a long while in this particular branch, and that means that our facilities were very incomplete, appliances crude and ideas undeveloped, with but a few men willing or adapted to the completion of an embryo work of such uncertain results. It took time to know that cavities were not prepared properly. It was long before we were positively certain of the correct thickness required for the metal matrix, and what had we for porcelain? Just what happened to be on the

market for continuous gum work, and when that necessity was taken in charge by the manufacturers it was long before satisfactory material could be obtained. Our appliances were crude and few, consisting of a few amalgam burnishers and rubber-tipped penny pencils, but we were fortunate in having a more finished product in the way of furnaces. There was the Land, Fletcher and Parker-Stoddard and later the Downie and Ash gas furnaces, the manipulation of which took time and considerable quantity of wind, but, to use the expressive language of the day, we "got there," and that was sufficient for the time being.

Fortunately for us, the cements were good, and to that fact can greatly be placed the salvation of porcelain, for without a good cement where would we be, even at the present time? But, "looking backward" again, we must acknowledge that in those quite unobtrusive days we were spared the incessant controversy of the present time, for we who advocated the high-fusing porcelain had it all our own way then. Fusing points, shrinkage and crushing force were not details that we were wont to bother with; we were just jogging along, feeling our way, satisfied and gratified with a passing notice, living with hopes of a greater future, and so the years passed by, each marked with some progress. Downie jarred us with his so-called low-fusing body, that was a diversion. It was advertised and pushed in a business manner. Manufacturers wakened up and heeded our demands for a varied porcelain.

Electricity was called to our aid, and so it was all along the line—wherever there was a vision of profit there was a corresponding supply of material and appliances, and thus were many of the earlier difficulties overcome, for in almost every case when assistance was asked of the porcelain manufacturers in the way of bodies and teeth in various forms they refused because of small demand of their product. There was one exception in the Wilmington Dental Company, of Philadelphia, for, although out of existence, I am forced to acknowledge many courtesies and much assistance.

Leading up to the present time, it is only right to give credit to Dr. Jenkins for some of the great interest at present displayed and to attribute much of the impetus this class of work received to his progressiveness and energy. A man of his character and reputation devoting himself and believing in such work must necessarily

impress many of our older and more conservative brethren and help to convince them that porcelain operations were surely something after all, and the result that many have journeyed all the way to Dresden to return converts, and I may say enthusiasts. We could have saved them great expense and time by simply having them call and see us; but, then, going abroad for something is more seductive. However, I am glad it did happen so, for such interest had a tendency to make opposition, and a commercial saying is, "Opposition is the life of trade," but it is the life of a profession also if the topic has merit, and we undoubtedly believe it had and has, and the result is the condition of today.

Porcelain is an accepted and reputable branch of dentistry, and thousands are helping to sustain its establishment, and for this means we are equipped in a manner so substantial that its vigorousness is prominent at every turn. In fact, it is preëminently the topic of the day in the profession, and its merits, varied appliances and numerous advantages discussed all the world over wherever dentistry is known.

I have already stated what we had, and most of you are well informed as to what we have, but, just for comparison, let me say that where there was only one method, now we have at least a half dozen, each in turn having its followers with their individual special ideas, making such a variety that a beginner is excused for being mystified and forgiven his interrogations. Shall he become a high-fusing advocate and encircle himself with all the difficulties ascribed thereto by the low-fusing man? Or shall he manipulate low-fusing porcelain and become enamored with the gold matrix and its disadvantages as portrayed by the opposition? Or had he better call in the assistance of Dr. Peck and his method, or journey to Chicago and interview Mr. Brewster on the press system, each having its virtue, but all leading to the one end—that of porcelain inlays? Another problem may be in the choice of porcelain body—Brewster's S. S. White Company, Dental Supply Company and Jenkins. Then finally comes the furnace problem. Should it be a Hammond, Custer, Pelton, Mitchell, Gerhardt or a Price, or he may be of an economical turn and make one himself? But it is to be hoped that confusion will not be confounded in an attempt to master the peculiarities of the various compounds, such as shrinkage, crushing

strength and fusing points, although for the latter it is possible to have a pyrometer attachment to his furnace, and not without profit.

It is at this point that I am tempted to advise on the respective qualities of the many different articles offered for the work, but to do so I should be forced to enter into detail of technique that may be wearisome to many, therefore I shall rest satisfied if I can endow those of you who have just taken up porcelain or those who contemplate that step with some of the confidence that is mine through many years of experience. Porcelain as a filling material has so many qualities to recommend, and its manipulation is so seductive that the temptation to go to an extreme is the tendency with many. This we must combat for the welfare of ourselves and our patients, for although in the hands of an expert the use of porcelain apparently has no limitations, it is dangerous to emulate such examples, therefore do not throw aside your gold pluggers because you are practicing porcelain. You will find them exceedingly handy sometimes, just as I have and expect to until the time comes when I am able to delegate such work to an assistant, for, strange as it may seem to believe, I am still a general practitioner even after so many years with a special tendency.

The durability of porcelain is unquestionable, but the first requisite for success is proper preparation of the cavities. That is an important part of this work and one that has had much attention recently, and I can not do better than to refer you to Dr. Thompson's most excellent paper on that subject, read before the National meeting at Asheville last July and published in the May issue of *Dental Digest*. He covers the ground better than I ever did and more thoroughly than any other man. I do not agree with all his points, but I do agree with a great many.

Porcelain is particularly agreeable on labial surfaces extending to the cervix and some of my first work was of this kind, and after twelve and fourteen years it is still doing good service, but in many cases after a period of ten years I find a tendency to recurrence of decay where the enamel has that white appearance so frequently seen at the necks of soft teeth. I recommend a liberal application of "extension for prevention" wherever there is that indication, for porcelain can not preserve tooth structure beyond the cavity margin any better than gold, but there should be less hesitation to extend the

cavity, because the porcelain inlay is so much less conspicuous than gold.

My experience with porcelain as a filling has been so varied in form and position, and in the majority of cases such a satisfactory tooth saver that I find it difficult to choose any portion and dwell upon its merits. My troubles have been many and I am still far from being immune, but in hundreds upon hundreds of cases, and many of them executed when facilities were poor, I still retain the same ideas in regard to the wisdom of its use. I have taken the most hopeless wrecks condemned to extraction and made them useful if not always beautiful, and it is very pleasing to see them after twelve or fifteen years doing excellent work, needing but slight repair. One of the valuable recommendations of porcelain as a filling is the fact that a tooth of poor structure can be saved equally successfully with one naturally stronger, and many times have I seen a section of the natural tooth break away, leaving the porcelain intact. In fact, the ability of porcelain to stand a strain is remarkable, and to prove this point I have only to refer to the scores of central tips which remain intact after many years of constant use. I replaced one recently that had been abused for fourteen years and found the cavity edges good and the interior perfectly sound. Another large contour I replaced after thirteen years, which became loose by the tooth enamel splitting at the cutting edge, and but for the fact that frail enamel breaking had changed the form of the cavity I could have replaced the original with satisfaction, for the porcelain was apparently as good as when first inserted.

And so I could enumerate case after case where time seems to make no perceptible change. My most successful operations have been on the anterior teeth, next the bicuspid, and lastly molars, although I have many operations in the last named teeth doing most satisfactorily for ten and twelve years.

The question has arisen in regard to change of shade of natural teeth through aging of patient.

I am better able to state in a few cases that change has been a disadvantage, but in the majority of patients watched for this purpose the change is so slight that it can not be called a defect, and certainly not sufficient to warrant the insertion of new work.

It is particularly gratifying to have a patient return after ten

or twelve years, whose residence is in some distant part of the country, and upon cursory examination not notice porcelain work that had been forgotten, and a search of the records surprise us with the fact that so much time has elapsed since the operation had been performed. This had occurred repeatedly and I always feel a better dentist for that day at least. I could speak of scores of cases, all proving the great durability of this work, but it must be unnecessary, for that fact you already accept.

The non-conductivity of this material is another point of importance, for the percentage of pulp affection is so small that it can not deter the most conscientious from its use, and I can not report one case where the health of the pulp was affected if not encroached upon unnaturally, but this part of practice must depend upon the operator's skill and ability to note the pathological conditions. We are all likely to err in this respect, and I do not claim to be more proficient than most others, but with careful discernment I am sure the minimum trouble will be on the side of the porcelain worker. And now a word for our faithful ally, cement; our friend and yet a foe; for its assistance has given us durability and stability—in fact, without it there could be little to talk about. With its absence we could not have porcelain an established branch of dentistry. Its tooth-saving qualities are known as long as the material has been used, but its rapid deterioration, when directly subjected to the oral fluids, has classed it as a temporary filling material. It has always been known as a grand intermediate for a metal filling, and it is in that connection, together with its adhesiveness, that forces us to make a most profound salaam. From an esthetic standpoint, it is our enemy, because of its opaqueness and inadaptability to minute shading so necessary for correct operations, and this fact has made many an operator anything but enthusiastic on beholding the results after the insertion of an inlay. The most discouraging results are mostly in thin labial inlays, and it is for such places that we all yearn for some transparent material that can not interfere with the porcelain shade. However, the cement is not always at fault, for my experience has taught me to be as careful in shading cements as the porcelain. I have also learned that any good adhesive cement is suitable for porcelain work, providing the dentist will do the rest, and that is a properly prepared cavity and the porcelain correctly adapted for the cement

to hold with. Cement has a natural affinity for tooth structure, but not for porcelain, therefore it must be assisted, and I prefer undercuts whenever possible. When impossible to do so advantageously, then use hydrofluoric acid. The latter I use but very little and not at all until two or three years ago.

The subject of porcelain inlays is a popular one and interest in such work is increasing rapidly. The importance attached to it is deservedly great, but it is not the entire field by any means. What about the wonderful crown work that lies within your power to have a thorough knowledge of? This is a portion of porcelain work that I am sure only a very small percentage of dentists have ever seen, and therefore have only a small idea of its immense importance. Ready-made crowns have no place in my office, except as a misfit relic, and the Richmond or any soldered crown of its kind I have considered back numbers years ago. It is not a boast, but merely a statement of facts, when I say that I can produce a variety of crowns sufficient to cover a demand for any case possible to present. A class of work which has been tested for so many years that not a shadow of doubt can be raised against its durability and its adaptability is only limited by the operator's ingenuity. They consist of various hollow crowns: Tube crowns, banded tube crowns, dowel pin crowns with band and without, section crowns, etc. This class of work leads to bridges of various kinds, movable and stationary; in fact, the man with a furnace has the means at hand of overcoming hitherto impossible operations to such an extent that he can always be in the lead, and distance his competitor who may choose to stay in the straight and in this instance very narrow path of old time dentistry. In former years, when there was always a question mark after inlay work, I always had the consolation that it would take some loud shouting to shake my confidence in this special crown work, and now an earthquake could not do it, unless it swallowed me up and then some of the crowns would go with me.

Some dentists do not place much store in saving a pulp, but I do and I am proud of the fact that many hundreds are placed to my credit which could not have been without this system of work. Time and again I have taken the most despicable remnants that were once teeth and made them useful, not for just a few months or a year, but for ten, twelve and fourteen years.

As an instance I will quote an extreme case, that of an upper molar. I had been doing considerable operating in a lady's mouth and before dismissing her I noticed that three molar roots that were separated, but firm, and I suggested trying to make them useful, which I did by burnishing thin platinum over the ends and putting a small pin in each of the canals. The bite was close, so the crown when finished was more like a button than a tooth; however, I placed it with gutta percha and year after year it helped its occluding mate to share the work. About a year ago the lady informed me over the 'phone that it had come off and wished it replaced, so I told her to bring it in. This she did and I was amused to find that it had come off with a root attached and she was much disappointed not to have it again, for it had been a good friend for eleven years, and now it is in my treasure box, along with many other cripples, which sometimes help me to prove my "yarns," for years ago there was little confidence in what could be done with porcelain, and I had little to lose and much to gain, so it was a case of "Pike's peak or bust," and, thank good Providence, it was not the latter.

To recite such cases might be convincing, but probably not interesting, therefore I briefly state that I have ground and covered teeth with living pulps by the hundreds, and where the pulp is healthy I have had no trouble whatever and not over one per cent of treatment from any cause. This is a correct statement and sufficient to refute the testimony of those who devitalize on principle, because, as they say, to save future trouble. I will take a living pulp with its vagaries in preference to a devitalized tooth with its positive uncertainty to be always free from trouble, especially in the climate of the East at and near the ocean.

I assume that some of you have had sufficient experience with working porcelain to enable you to comprehend its advantages, and it may be that something I have said will be of future assistance and encouragement. To others who have only given this subject casual attention may I hope to have awakened an interest which may lead to the adoption of newer methods which will ultimately increase your interest to the mutual advantage of all concerned, for I am safe in saying that the next generation of dentists will be so educated to this system of work that those with a knowledge of it will have little consideration for progressive honors.

The invention of gasoline furnaces enables the country dentist to be on the same footing as those in large towns and cities having gas or electricity, and although his opportunities may not be so great for continual practice, he can have an appliance that will assist him to enlarge his sphere of work and create a demand for a better quality of operations and thereby increase his practice by having the ability to hold those who desire the best and often journey long distances to secure it.

We are only on the threshold of this valuable work, and the limited knowledge that we possess of porcelain at the present time will appear to future generations as an object beheld through an inverted telescope.

In a few years hence there will be the most translucent porcelains with shading so perfect that will satisfy the most esthetic dentist, and that will mean more than at the present time, for the artistic sense in this connection is being continually improved and will ultimately predominate to the advantage of every portion of dentistry.

Our mechanical appliances which are such an improvement over those of the past will be obsolete in the future, replaced with beautiful instruments that will be necessary to the skillful operator of that time, and there will be transparent cements to assist in the culmination of these perfect expectations.

Dental institutions will give this branch of dentistry the position on its curriculum that it deserves and is at present only hinted at, and every student will be forced to a knowledge that is now optional and the trend of the times will be such that without an equipment he will be secondary.

Our State boards, if there are any, then will make such teaching compulsory from a practical standpoint, and then the originators and perfectors of this new dentistry will have earned such gratitude that its history will not be complete without mention or devotion that will be justly due them.

Therefore, it is not unfitting to conclude with the old proverb, which says:

"Be not first the new to try,
Nor yet the last the old to pass by."

THE PRACTICE OF DENTISTRY.*

BY C. A. VAN DUZEE, D. D. S., ST. PAUL, MINN.

It is not uncommon to hear our best men express the regret that they have devoted the best portion of their lives to dentistry, and some years of study to find the reasons for this condition have led me to write upon the subject.

My previous papers have dealt with the problem from several standpoints, and while similar thoughts may appear at this time, it is my purpose to take up the question in a general way, briefly covering as much of the ground as possible.

A dental career is usually selected by a young man for some reason; there may be the bright example of a friend who has been successful, the opportunity may seem more available, natural mechanical ability may prompt the effort, or the seeming ease of money getting may inspire.

It is reasonable to suppose that this youth, filled with enthusiasm and ambition, sees the most desirable points in favor of either reason from his particular standpoint, and that he pays little attention to the chances of failure until his course has been pursued beyond the point where he can withdraw gracefully without damage to his purse or pride, and the result is more oftentimes failure than most of us would care to admit.

Up to the present time the failures have been permitted to go on, and the conditions surrounding our profession have in a measure prevented recognition, and it has been easy for men to live and even to prosper through the ignorance of a suffering public and from the fact that indifferent service has been more acceptable than none.

The fact that our profession has about reached a point where something radical must be done has been more and more forced upon me as the years have passed.

The leaders in life's struggle must look to the future; they must analyze the factors which influence the present and must devise ways and means to meet and solve the problems which mold progress.

*Read before the Minnesota State Dental Association, June, 1904.

It has been well said that the same energy which has been required to win success in dentistry if devoted to other lines would bring far greater results.

If this is true it means either one of two things—the profession is not worth the effort, or its members are not properly compensated.

There are few conscientious men who will admit the first, but the second will be subscribed to by many of us.

If you agree with me that the profession of dentistry is worthy of, and should receive more in the way of compensation, both in the way of gratitude and respect and of financial remuneration, we will proceed to contemplate some of the factors which may influence the problem.

We have passed the point where present conditions will suffice to accomplish the desired end, and as I have said before upon other occasions the field has broadened to a point where it is no longer possible for one man to encompass the whole. We have enlarged our field a thousand fold, we have added to our burden one element after another of progress until the capacity and endurance of our members has been strained to the breaking point, and we have refused to realize, or have overlooked the steps which are necessary to our future welfare and progress.

It is not possible for one man to become an expert in, and I am fully convinced that it is a mistake for one individual to try to accomplish, the multiplicity of details which enter into the practice of dentistry today.

The preparation of cavities for gold, plastics and inlays, the manipulation of the various filling materials, each one of which requires almost a lifetime to master, the construction of crowns and bridges, prosthetic art, orthodontia and the construction of appliances, the treatment of oral diseases, the surgery of the mouth, extraction, fractures and the administration of anesthetics are but a part of these details, and in addition a man must learn to exercise the most skillful judgment in diagnosis, which, by the way, is almost universally underestimated and neglected.

The records which should be kept are nearly always lost in the shuffle, or are slighted and neglected until their value is badly wrecked.

Few men are capable of deriving the benefit they should from

their daily experiences without records which are not only carefully kept, but are looked over and studied, but how many of us keep careful records, and if we do keep them, how many of us study them?

The man who keeps and studies his records is entitled to compensation in proportion as they make him proficient in the science of diagnosis, and broaden his judgment as to the treatment required in any given case.

Other professions have reached the point where specializing becomes necessary and have taken steps to correct the condition. In medicine we have the specialists who abandon a large part of the field and devote themselves entirely to a certain circumscribed portion of the work.

It is the same way in law, literature and theology, and we are standing very much in our own light by not following in their footsteps.

Permit me to quote from a paper by Dr. Ward in the May *Dental Cosmos* on "The Difficulties of a Dentist."

"To accomplish a given piece of work in dentistry requires the calling into play of a greater variety of talents than any other vocation upon earth. In other words, there are few callings that we as dentists do not need to be more or less familiar with. Is dentistry a specialty of medicine? is a subject which has not been settled yet. But we are specialists—expert specialists in every mechanical and scientific calling. Our calling is a composite, uniting in one the physician, scientist, watchmaker, goldsmith, molder, mason, and even blacksmith; the delicate touch of an artist, the strength of a Hercules, the patience of Job, and the perseverance of Grant.

"I do not know but that an aspiring dentist would attempt to put a gold shell upon the 'appendix vermiformis' from the distance of the oral cavity. Thus do we attempt and thus do we fail!"

It seems to me that the greatest difficulty we have in the way of dividing our field lies in the lack of confidence we have in ourselves and in each other.

We have not confidence enough in each other to entrust our patients to those who would be better able to give them expert service for fear that we might lose the patient or possibly a few dollars, or perhaps we are afraid to have our work subjected to possible criticism; in any case, we do not do it. We know that we are not capable of

doing a given piece of work as well as it could be done, and we know that there are others who could do it in the very best manner, and it is clearly our duty to arrange the matter, but we have not done it.

The past history of our conduct in the handling of such cases as have been transferred to our care from other dentists is not beyond criticism. We have sometimes been a little careless in our way of handling the reputation of our brother practitioner. Envy and jealousy are not unknown and in many ways there is room for improvement. The race for honor and place has frequently been won by methods which would not bear the closest inspection.

If we are to adopt methods which will result in the elevation of our profession it will be necessary for us to look well to our personal code of ethics and meet the issue with honest effort along lines that will result in the greatest good to the greatest number.

One way to inaugurate this movement is to encourage specialists to open offices in our larger cities for the exclusive purposes of doing surgical, prosthetic, porcelain, orthodontia or other work. He should be an expert, a graduate of one of the best colleges and a man of highest personal character, one to whom we could trust our patients without reserve.

The charges for such service as would thus become available are not to be compared with the ordinary scale of fees in vogue.

We might also be instrumental in starting a revolution in the matter of charges by educating the people to appreciate the difference between expert and ordinary service, and what is of far greater importance to realize, that there is no such thing as a scale of fees which can be even approximately adhered to by any of us.

I think we are largely to blame for the condition which exists. We have, in the past, published so-called lists of fees, and even if they were very elastic, they resulted in great harm.

Our ranks are today encumbered with men who have no professional standing, who drag the profession in the dust, who prey upon the unwary and fleece the ignorant, and a large proportion of the people do not, or can not, distinguish between the knave and the man of higher worth.

We owe it to ourselves to take such steps as may result in the doing away with these festering sores upon our professional body.

The legislature of this State has been organized since before

many of us were born, and yet I venture that they have never been asked for a dollar toward the establishment of a dental infirmary or hospital or a department in some existing institution in which our services might become available for those who suffer and are too poor to pay.

There are over five hundred dentists in Minnesota, and there is not a member of our legislature who does not number from five to ten or more of us among his constituents, and the balance of the people who vote are many of them interested sufferers, who might be influenced to aid this cause. Under such conditions it should be the easiest thing in the problem for us to appoint a committee to confer with similar ones from the other societies in the State and agree upon a plan which would result in the accomplishment of a step in the right direction.

It has seemed to me that there should be another degree available for the advanced student in dentistry which should be attainable after a number of years of practice and the accomplishment of a certain amount of research and study, and which of itself would give its possessor certain advantages not otherwise obtainable.

Today it is not easy for the public to distinguish between the man who writes D. D. S. or D. M. D. after his name and who is everything that could be desired professionally, and the man who has done little but disgrace his calling, except by personal investigation, and the result of that investigation is often disastrous; and to the man who advances far beyond his fellows there is not even a title which to the stranger would distinguish him for what he is.

The question of education of the young is another very much neglected one; if I am correct, there has been a committee of this society out for several years who were to bring us something for our consideration along these lines.

I trust my remarks may be unjust and that we may see the results of their labor at this session, but we have neglected the matter up to the present and I wish to say a few words in behalf of one of the most important elements in the problem.

A large proportion of the children in our public schools have not the slightest conception of the simplest knowledge regarding the teeth. They are taught to make dolls' hats of raffia, to draw pictures of cows, to spread impossible colors and to do a thousand and one

things of questionable value. I do not wish to criticise our present system, but if there is room for the accomplishment of all this, it seems as if a place might be found in which to at least direct their attention to the fact that they have teeth and that no living power on earth can save them from the attack of disease unless they give them at least the care that they give to their faces, hair and finger nails.

Is it not important that our children should know the dangers that surround their teeth, their value and the suffering that surely follows neglect?

The child of today will be the parent of tomorrow and we have it within our power to see that the almost criminal ignorance of so many parents of today is not repeated in the coming generation.

The men and women who are responsible for the government of our schools today are not coming to us for the knowledge that these children need, for few of them realize the importance of the subject, and it is for us to take the initiative. We must go to them and when we go to them we must take something of value. We must know what we want and what they need, for we alone can decide the details of the first steps. We can not do this upon the spur of the moment, we must plan, and digest, and arrange, and crystallize, and then we must furnish the opportunity and the means.

Are you appalled at the magnitude of the task? Do you want to know who is going to pay the score? There is no such thing as belonging to a profession that will stand still; we must either go upward and onward with the world, or be left behind. It is not enough that we are being carried along with the crowd.

It will not suffice that we have accomplished much. These things can be said with equal truth of other callings. It remains for us to rise above the crowd and to accomplish more.

In conversation recently with a physician, who is practicing in a nearby village, he informed me that he often extracted ten to fifteen teeth in one day, and I do not question that there are five hundred such villages where similar conditions prevail. Let us suppose that one tooth each day in each village is lost in this way and that in three hundred days we lose one hundred and fifty thousand teeth. I do not think the picture is overdrawn. One hundred and fifty thousand teeth each year in this State alone.

Most of the teeth thus lost represented a crime against nature and a reproach upon our profession. The conditions which render such things possible are not wholly beyond our control. If people could be educated to realize the value of their teeth they would hesitate before permitting them to be thus sacrificed.

Under our present laws parents are not permitted to abuse their children beyond certain limits, but they are not prevented from allowing disease to destroy their teeth, nor to seek relief in extraction with its broad train of evil results.

How many of us have seen these helpless children led to the slaughter by the ignorant and unthinking parent?

I could go on for a long time with similar comparisons, but the occasion does not permit and the few remaining moments may perhaps be devoted to some brief mention of what I believe should be done to correct these conditions. First of all, we must realize the importance of the subject. I believe we should convey to our teachers of dentistry the thought that the time has come to stimulate the adoption of some special line or lines of work in those students who show unusual fitness.

There should be some means of encouraging men to attempt research along scientific lines. There is sufficient power in the ranks of the profession of dentistry in Minnesota to obtain from the legislature ample means for the carrying on of this as well as other plans. We have men of ability who would be willing to devote their time to its accomplishment. We should encourage the best of our young men to adopt our profession and with equal vigor discourage and, if possible, prevent undesirable men from coming among us. We should extend the hand of fellowship and tender our support to those who desire to become specialists.

We should foster the spirit of professional brotherhood and guard the reputation and welfare of those who are entitled to our respect, and should by every fair means labor for the undoing of those who are unworthy of a place in our ranks.

We should demand and insist upon a more general knowledge among our people of the value of their teeth and those of their children, and of the ways and means for their safe keeping.

We should see that proper laws are enacted for the prevention of abuse in this respect.

In any reformation the most important features are those of education to combat ignorance, and of wise charity to overcome the misfortune of poverty.

In these there are two lines of attack immediately open to us. We can approach the most important one by the appointment of a committee to carry on the unfinished work of enlisting our educators in the question of spreading the seed of knowledge among the children of our public schools.

We can then place the matter of infirmaries, hospitals and free dentistry for the poor in the hands of another committee.

It would have been easy for me to draft resolutions to cover these points and to have suggested the names of men to take up the work. It would have been easy for you to vote "Aye" and for your president to make the appointments, but, as I have said, we must first realize the importance of the work, and the object of this paper has been to provide the opportunity for discussion. If this object is accomplished my mission will have been fulfilled.

DENTAL MEDICINE AND THERAPEUTICS.*

BY W. E. TENNANT, D. D. S., FOND DU LAC, WIS.

It is with some reluctance that I attempt to write upon the above subject. A general practitioner can not hope to treat any one subject as a specialist would, yet it is my aim to prove this evening that this is not merely a theoretical subject, but that it is just as intensely practical as any other phase of our daily practice.

Of course, the dental college of today has a chair of Dental Medicine and Therapeutics, but how many—or, rather, what percentage—of the class regard this as a really practical subject? Probably about ten per cent.

A recent graduate from the other ninety per cent has for his first patient, perhaps, one with an obscure case of neuralgia, due, possibly, to anemia, malaria, or syphilis; in any event, no cavities, no inflammation, but a highly developed nervous system. What is the "decidedly practical" man to do with such a case? Another patient applies who is extremely frightened and nervous, has teeth that are melting

* Read before the Fond du Lac County Dental Society, January, 1905.

down like so much chalk, apparently, pulps nearly or quite exposed, many buccal cavities, which are both deep and extensive. What can be done in such a case without something to alleviate the pain? Another one with a pronounced case of pericementitis; no sleep for a night or two, no appetite, is constipated; a rapid pulse, a fever, much swelling and elongation of from two to six teeth, and a throbbing of the temporal pulse. What is to be done? The old-time method, and one used far too much today, is to look wise, hammer around, make things materially worse, and then send the patient to a physician.

What is there about the ordinary drugs and medicines of which the average dentist is afraid? He uses the essential oils and carbolic acid, and perhaps the obnoxious Beachwood creosote (which has one virtue only—that of preserving fence posts) for all the ills that are given to his care. Perhaps he uses cocaine, but if he does he is prone to lose his head at the least unfavorable symptoms.

We as dentists should know fully as much about ordinary drugs—such as anodynes, sedatives, hypnotics, antipyretics, laxatives, cathartics, etc.—as the physician; and if we applied ourselves, as they have to do, we could have the same practical knowledge.

The prescription of today is a short one in most cases—it doesn't need to be a long one, and any prominent physician will tell you that the old long-drawn out "shot-gun" prescription of from six to twelve elements has had its day.

All we need is a few rules to keep in mind:

(1) Never use more than one remedy at a time, if one will serve the purpose.

(2) Do not combine free acids with hydrates or carbonates (these are easily broken up and we get an entirely new compound), or oxidizing agents with easily combustible materials.

(3) Generally, do not combine two or more soluble salts.

(4) Such drugs as mercury, the iodides, etc., should be given alone—water or syrup used as the vehicle.

(5) Tannic acid is incompatible with almost everything (this is the reason it makes a good antidote in nearly all alkaloidal poisoning).

(6) Select the simplest solvent you know of, remembering that the solvent power of water and alcohol for their particular substances decrease in proportion to the others added.

A wise physician once said: "If you can write a prescription so that your chief ingredient will be perfectly soluble and will not sink to the bottom so that you will have to shake the bottle, then you know something about prescribing."

Let us consider some cases that require medicine internally. Take the obscure case of neuralgia; of course, find the cause—but what if it come from malaria? Then give sulphate of quinine, 2 to 20 grs.; if from general debility, give a tonic of arsenic, iron and quinine; if from a forming abscess, or caries, or necrosis, treat it accordingly, and if that case needs a laxative, citrate of magnesia is good (either the powder or the effervescing solution), or a saline cathartic might be indicated. If the case needs the bromides or the coal-tar products, prescribe them; but, of course, know the dose, and just what you are using and its action, and you are protected by law just the same as any physician.

For that pericementitis case; even if you find the cause and give vent to the congested blood or gas or pus, the case is usually uncomfortable for some time, especially if there is infection present. There is stasis at the apex, caused by prolonged inflammation, and a cathartic will help the trouble immediately. After this, calcium sulphide is a good remedy to give—1/10 grain every fifteen minutes till four or five doses have been taken, then less often.

A good alterative works well here, and Dr. Buckley's favorite one is potassium iodide, and, personally, I know it works well. A 3ss in ʒiii of simple syrup gives approximately 3 grains to a dose when taken in teaspoonful doses, and should be taken three times a day. The many ingredients of the sarsaparilla syrup render it very valuable as a vehicle, as it is tonic, diuretic and cathartic.

Dr. Harlan recommends in these cases of acute infection 5-grain doses of soziiodol every hour.

Dovers powders or phenacatine are both good anodynes, 5 to 15 grains may be used.

Pregnant women are frequently told to postpone all dental work until after confinement, which is a mistake. The shock of dental operations, if done properly, is mild indeed compared to an aching molar at this critical period. Necessary work should be done, care being taken not to cause much pain. Fifteen grains of potassium bromide can be used nicely here, or the patient can take a powder before leaving her home, then another before starting operations.

The same drug will also act very well for a nervous temperament.

Another thing that is apt to frighten a young man is profuse hemorrhage; and here is where ergot is indicated, as it is conceded to be the best internal astringent we have in the list. Give fifteen drops of the tincture every fifteen minutes until four or five doses have been taken, or a dram may be taken at the first dose. A patient is not going to die immediately from a dental lesion—therefore keep a cool head.

One teaspoonful of tannic acid in one-half glass of water, and of this one teaspoonful every fifteen minutes is very good indeed.

And the much mooted pyorrhea is deserving of remedies internally, as specialists have learned that the local treatment alone falls far short of a cure.

Of course, remove the deposits on the roots by all means; but they came from the blood, did they not? Then the blood is not normal—and if abnormal, so is the body in which it circulates.

Specialists on this disease are treating their patients for the causes of this disease, i. e., chronic constipation (which includes about ninety per cent, especially in women), uremia, scrofula, syphilis and diseases of such natures, and we are getting nearer to the seat of the disease, as has been demonstrated by such treatment. "Thialion" (proprietary), a salt of lithia, and lithinum bitartrate are both very good in uric acid pyorrhea—the latter is recommended highly by Dr. E. C. Kirk, of Philadelphia.

A case of shock or collapse need not be made to seem worse to the patient by the operator getting frightened or nervous. If from cocaine, give opium, as it is a direct antagonist to cocaine; a hypodermic injection of morphine (the chief alkaloid of opium), $\frac{1}{8}$ or $\frac{1}{4}$ grain, and atropine, $\frac{1}{120}$ grain, will help at once. Nitroglycerine is also good, $\frac{1}{100}$ grain; then brandy or aromatic spirits of ammonia are good restoratives. If we want the quickest one obtainable and one that acts upon the vasomotor nerves at once and causes a flush almost immediately, we should have amyl nitrate. Get it in 2 m. capsules; break one on a napkin and let the patient inhale it and we get results very rapidly. Hypodermic tablets should be in every office, as a patient has time to die two or three times while we are giving medicine entirely by the stomach; and such restoratives as nitroglycerine, strychnine, caffeine and the pain-killer, morphine and atropine, and the best emetic we have, apomorphine ($\frac{1}{16}$ grain being

about the usual dose), when given hypodermically acts quickly, and there should be no fear in giving them by this method when indicated.

I have mentioned the coal-tar products and I fully realize the prejudice against this class of drugs. I will admit that others can be used in their stead, yet in some cases they act admirably. Phenacatin, although belonging to this class is considered one of the safest anodynes we have in the whole list.

We can substitute trional or sulphonal, 5 to 15 grains, and have a good anodyne.

Acetanilid, gr. ii; caffeine, gr. $\frac{1}{2}$; mono-bromated camphor, gr. $\frac{1}{2}$, and capsicum, gr. $\frac{1}{10}$, made into one pill or capsule, is a fine pain killer and leaves no bad after effects, while one authority recommends codeine, $\frac{1}{2}$ gr., not over three tablets given to the patient, and says he prefers it to all others.

Human beings are certainly deserving of treatment according to the Golden Rule, and a few good remedies wisely used are very fine adjuncts to a dentist with good judgment as to how they should be used.

Of course, a soothing disposition, tact, and a sympathetic touch will work wonders and should be in command always, yet some cases seem absolutely out of the sphere of the influence of such qualities.

If a patient suffers, no matter from what malady, he wants relief, and if you can give it immediately he will be thankful for a dentist who has common sense, some scientific knowledge and a goodly quantity of the "milk of human kindness."

AN IDEAL BANDED CROWN.*

BY DR. A. LAMBERT, SPRINGFIELD, ILL.

Mr. President and Members of the Sangamon-Menard Dental Society: It is my purpose to dwell upon the construction of a banded crown, which might be used almost universally, but which is especially adapted for those cases where the Richmond crown has seemed mostly indicated. I shall not digress from my subject by suggesting any favorite method of preparation of roots or the filling of root canals, as every dentist has his own method. We will suppose the root has

* Read before the Sangamon-Menard Dental Society.

been prepared for reception of the crown. Take measurement of root and make and fit band, using 22 carat gold plate, gauge 30; now solder a piece of pure gold to band, using 20 carat solder, thus making a cape. Punch a hole through center of cape, through which insert root post and solder in place. When you have pressed this firmly to place on the root you are ready to take impression, using plaster of Paris preferably for this purpose. When sufficiently set remove impression. Now remove cape from root and put to place in impression, paint the impression with separating medium and pour your model. Upon separating model from impression you are ready to construct your crown proper. I prefer to use the Justi removable pin crown



on account of its peculiar and valuable anchorage to pin, and which affords an advantage in this respect not possessed by other makes of removable pin crowns. Select suitable crown of proper size and shade, very little grinding being necessary, and when properly fitted as to length and alignment, etc.; grind V-shape space labio-lingually. Now take piece of pure gold and burnish over cervical surface of crown; punch hole through center of this and insert post through it and into the crown. Now wax crown to place on model, using sticky wax. Remove porcelain crown and make your investment. When investment is thoroughly hard wash out the wax and solder the parts together with eighteen carat solder. Remove from the investment and cement porcelain to place, thus completing crown. Trim and polish all gold surfaces and your crown is ready for final insertion.

This crown I firmly believe is fully as strong as the Richmond without having any of the serious objections of the Richmond. The porcelain is not subjected to any heat, consequently there is no liability of a possible change of shade and the possibility of checking is also thus eliminated. It possesses other advantages not to be found in other crowns, *i. e.*, that it can be made using any of the various makes of removable pin-crowns that are to be had from the numerous dental depots.

Each tooth of the Justi make of removable pin-crown is numbered on its lingual surface. By noting this number and making a record of it along with the operation we are afforded an opportunity of obtaining an exact duplicate in case of necessity.

PROCEEDINGS OF SOCIETIES.

PROCEEDINGS OF THE MINNESOTA STATE DENTAL ASSOCIATION, HELD AT ST. PAUL, MINN., JUNE 16, 17 and 18, 1901.

DISCUSSION OF THE PAPER, "SYMPTOMS INCIDENT TO DENTITION," BY
WALTER R. RAMSEY, M. D., ST. PAUL.

DR. J. W. PENBERTHY:

I have not prepared a paper on the subject because I have not had time to do so, and I had an opportunity of looking over the doctor's paper only a few hours ago. I wish to compliment the doctor on his paper. He has given us as far as possible what we ought to have laid down for us in our text-books. We are deficient in literature relating to this subject. Our writers apparently consider it of little or no importance, yet they concede the idea that it is important, because they give us a great many symptoms that may arise from dentition, yet very little is said in regard to treatment. Now I am speaking of the literature that is strictly intended for the dentist. Take the best works we have for the dentist, recognized as the best, yet on this subject the medical profession is very much in advance of ours, and it appears to me it is due to the fact that the authors take up these various symptoms that are laid down for us arising from dentition, and give us no method of treat-

ment, or practically none. We have some local treatment, of course. The doctor has said many physicians advocate the lancing of the gums, which in some cases is very well, but in many cases lancing would be most improper.

The doctor in his paper speaks of children's temperament. While the child's temperament naturally manifests the conditions that exist and are taking place, at the same time, in my opinion, while it is coming on (and it is true with some temperaments it comes on very mildly) that even to the mother it is hardly noticeable, yet there is a disturbance of the equilibrium which might be noticed if followed out more closely by the attendant. and if the indicated remedy be applied at the proper time it would modify the condition very materially. I think, as the doctor said, many writers have attributed a great deal of this trouble to bacteria. I think we run wild after bugs. There is no doubt in my mind that if we were to make a more thorough examination of the mouth and of the symptoms attending dentition that but for the bug theory a great many cases of retarded or difficult dentition would be materially helped. Of course, I realize this, that the organs of the child, or rather the intestinal tract, is vascular and more sensitive, and a disturbance of the equilibrium must have its influence and effect upon those parts, and it is natural for us to say or hear it said that bacteria have gotten in there and that they are the fellows that are doing the mischief. The disturbance is brought about by dentition. Some writers say that normal dentition is dependent upon the growth and absorption of the parts. That is true. If the parts do not absorb with sufficient rapidity to allow the teeth to come on there is trouble. While there are a great many writers who admit that there are many evils due to dentition and consider them simply as physiological and anatomical, I think they ought to have followed the matter up by giving us some method of treatment systematically. They have described local treatment, some cathartic or mild treatment, and let it drop there. Let me say to you that in my opinion the dentists are not filling the position today that rightfully belongs to them. A dentist should be qualified or invested with the ability to take care of the case commencing with the mother. I claim we are not standing upon the ground we should rightfully stand upon. We have not been taught to do it. I do not know

that it is our field, but it ought to be. Yet the colleges have taught nothing of the kind to us. Only recently I met a graduate of one of our best dental colleges, and during our conversation he asked me, "What are the symptoms of dentition?" I said, "They are many, a great many. There is swelling, heat, convulsions and many other symptoms." He said, "That is something new to me." That came from a recent graduate, so I can not feel that my school fifteen or sixteen years ago was so much at fault. Schools were not supposed to be as far ahead then as the school this young man graduated from. I believe the dentist should have the ability to take charge of the mother from the time or during the months prior to the birth of the child, giving such treatment as would tend to lessen the dangers and discomforts of dentition, followed by the treatment of the child subsequent to birth and during the entire period of dentition. Is there a man who would undertake to carry out this treatment with his patients and children? I hope the time is not far distant when our schools will take up a more thorough course of instruction of their students and carry it out to the extent where it properly belongs.

This is a subject that we might discuss here for hours at a time and then not exhaust it. I feel like complimenting and thanking the doctor for coming before us with this subject, and as he has said, if we were to invite the medical profession to our meetings more frequently we would get a great many ideas from them that we do not have today. On the other hand, I also feel that the medical profession might get a few pointers from the dentists if they were to invite them to read papers before them. We frequently find where a certain line of treatment is carried out by a medical man that it would have been entirely different if he had had the experience the dentist had.

DR. C. H. GOODRICH:

When I received the essayist's paper I was reminded of the story of the Jewish couple who were very anxious to know what calling or profession in life their son would pursue. They discussed the matter pro and con as to how to ascertain the fact, and they finally hit upon the following expedient: One evening they arranged upon a table a Bible, a glass of whiskey, and a purse of money and turned the light in the lamp down low and hid themselves and

awaited developments. When the young man came into the room he turned up the light, drank the whiskey, put the money in his pocket, blew out the light and took the Bible with him to his room. When the old folks saw what he had done the old gentleman said to his wife, "Ach! Rebecca, I know now vot our poy iss goin' to be. He is not goin' to be a rabbi, no; ent he iss not goin' to be a merchant, no; bud he iss goin' to be a pollidishun; he takes everything in sight!" So I feel about the doctor's paper, he took everything in sight to discuss. He has covered the points relating to the symptoms of dentition so fully and so well that there is nothing left to add to the subject. I am at a loss as to what to say in the matter, but I might ask the question, In what does this paper interest me as a dentist? I might say that it does and it does not interest me. In one sense it does not interest me because it takes me back to my student days and to physiology and pathology, but I have found in actual practice, as you doubtless have, that when any serious trouble of dentition arises it is the telephone of the M. D. which rings and not that of the D. D. S. When I was at college I was taught that a great many symptoms arose from dentition which the doctor points out as arising from bacteria. Of course, cases of reflex action are interesting and the paper deals fully with the symptoms presented.

So far medical science has not been able to bring the tooth through the jaw without suffering, and so we who have families know what anxiety is removed when the baby has cut its last tooth. I believe, of course, as the essayist has said, that it is the duty of the dentist to have such knowledge of the symptoms of dentition and a knowledge of treatment that he may save the little one as much pain and discomfort as possible.

I think the essayist should receive the thanks of the society for bringing this paper before us.

DR. J. D. BOND:

There is one point I would like to ask about, and that is, where is the pain when that condition which Dr. Ramsey describes takes place, where there is a raised surface of the mucous membrane? Here is a molar tooth, and the gum tissue above or below, as the case may be, offers resistance to the eruption of that tooth arising, as the doctor stated, from dead tissue. The pain is at the other

end of the tooth where the root is never calcified. It is of ragged, irregular shape. Any pressure gives pain and those are the cases that need lancing. If the child is sick at that time it is nothing more than nature's method of lessening the blood pressure. Dentition is a physiological process and for that reason the bowels should be kept in a normal condition as far as possible.

DR. MARY HARTZELL:

I have listened to this paper with a great deal of interest, but there are some points that have not been touched upon. One is that the nervous tension that is an evidence of dentition, is due, perhaps, in part, to the change in the alimentary canal, and there are other changes that may account very largely for the condition. Up to this time the child has been nourished on a milk diet almost exclusively. Its digestive system is being prepared for a different diet, and may not some of these nervous symptoms be due to that? Another point occurs to me. The physician, of course, has a very much wider field of experience along this line than most of us, because this is apparently a nervous trouble and it is rather placed under the physician's care, for it is often not attributed to the teeth, and the physician thus gets the opportunity to study the condition. In this condition where a number of the teeth are almost ready to erupt, or sometimes are not ready to erupt for some time to come, there is growth going on, the teeth are coming up through the tissues, and there is a sort of band of gum over them that holds them back and the pressure that occurs, particularly from the growth of the teeth in the lower jaw, can cause two sets of nerves to be pinched. I have seen cases where no particular tooth showed signs of erupting where free lancing brought about good results. Another point the doctor mentioned was that indiscriminate lancing may make very great future trouble, and the inference would be that the cicatricial tissue which would form would be more difficult of absorption than the tissue that would naturally be there. Among the medical profession it is admitted that cicatricial tissue is more easily broken down than normal tissue, so if you can not permit the teeth to erupt right away if you release that pressure you relieve the nervous tension and the child is more comfortable. Cicatrices may form and you may lance them two or three times, but what of that? If the teeth are causing distressing pressure it

is the only proper way. There are a number of cases where I have seen this treatment carried out and I have never seen the first case of infection. I think if the instruments are clean and the child is healthy you will run a very slight risk of infection, and the added comfort to the child is a matter of greater importance than the small risk you run.

DR. WALTER R. RAMSEY (essayist):

I might say about the literature on the subject that it is very limited up to the present time. I have noticed that the subject is practically dismissed with a half page on the symptoms. There is just beginning to be a reaction on the subject. Now they are going to the very opposite. They are just beginning to swing back and are giving the subject close observation, beginning to realize that infection directly is not responsible for all of these symptoms, that infection is very often due to the symptoms, so at present there is a great field for research along this line.

Dr. Goodrich raised the point of treating the mother before the birth of the child. That is a very good point. We know that the teeth of the mother suffer very severely during the pregnant period. The general treatment in such a condition is of the greatest advantage to the individual, but very frequently the physician does not see her, and she does not see the necessity of consulting the physician, and she goes to the dentist because she has something the matter with her teeth, and it is his province to advise her at least that this general treatment should be followed. Dr. Goodrich said the dentist does not often get those cases because they go to the doctor. I personally feel that I would rather send these children to the dentist, because I would rather he made enemies of the children than I. The dentist is proficient in the use of the lance in the mouth and is more dextrous than the physician, and he can undoubtedly do it better, and it is simply a matter of feeling that the dentist is competent to do it. So far as I am concerned, I always practice sending these cases, if I can, to the dentist. If the doctor attempts to do this work the child is ever afterward very much afraid of him, while if the dentist does the work after the children grow up a bit it does not make much difference with them.

The pain arising from difficult dentition may be anywhere. We

know that along the telephone wire we can not tell where the current is, and we must liken the pain in the nerves to the current in the telephone wire—it is everywhere. The pain may be very remote from the cause, it may be anywhere along the nerves that supply that portion of the system that are pressed upon. You know a lower tooth may frequently be the cause of the aching of an upper one. So the question of pain is a very indefinite one, and this same trouble may be in the ear. It is a very common thing for children to suffer with earache. I have seen a number of such cases recently, and in each case I found it was due to the irritation of the ganglion furnishing the nerve supply to the ear.

There has been a question raised in regard to the cicatrix. I know this; I have always rather doubted whether scar tissue absorbs. You know if it absorbs we must have inflammation. Absorption takes place by increased blood supply, but we do know this, that it stretches around. The surgeon knows that if he has a scar in the abdomen he gets hernia because it stretches. If we have a large amount of scar tissue we almost always get hernia because it stretches, but I doubt whether it absorbs.

DISCUSSION OF DR. WEISS' PAPER ON "IMPRESSION MATERIALS AND METHODS OF TAKING IMPRESSIONS."

DR. A. E. HAWKINSON:

Dr. Weiss has given us a very good paper on this subject. It is a subject that interests me very much, because without proper impression our work is lost. In regard to impression material, I usually use plaster. I have had some pretty hard knocks and I think there are quite a number of others in the same boat. I think there is a great deal in plaster. You can mix it any thickness you like, you can get any impression you want with plaster, and there is a great deal in taking that plaster impression out at the proper time. If you let it remain too long you have a hard time getting it out. In taking an impression I think a good many, especially for a full upper denture, do not use enough plaster. They use it very thin, very sparingly, because they are afraid of making the patient gag. I use a little impression tray that I was taught to use at school. I find when the plaster breaks it is easier to bring the parts together, and as far as gagging is concerned it is easily controlled.

I instruct the patient to keep the tongue perfectly quiet and breathe through the nose, drop the head forward so as to allow the saliva to run out. By following that method I have never had any trouble. I generally get my impression the first time. Of course, we have patients that have very sensitive palates. I have met several in my experience, and I recall one who could never wear her plate. She has had a dozen made. Of course, those are exceptions, but I do not think I have had more than a half dozen cases in the last seven years which I could not control under those conditions. I use an impression tray with a quarter inch on each side, and if I want to take an impression I mix the plaster and do not put it in the mouth until it begins to harden, and then I can get a very nice impression.

DR. G. F. ANDREWS:

I had no opportunity to see Dr. Weiss' paper and I am therefore entirely unprepared to discuss it. However, I got a good many excellent points from the paper. I can only give you some of my own practical experience in taking impressions. I believe the most successful way I have found is in using a combination of beeswax and plaster. I use it almost exclusively in partial and in full impressions. I believe it is essential to have a perfect impression of any case you are going to make a denture for. I do not believe in allowing the drawing of a modeling compound impression to govern the fit. I want a perfect impression of the parts I am going to fit, and I believe that is necessary in all cases. A man who cuts a partial plate all to pieces in fitting has no business to make a partial plate, because it is not necessary.

I am sorry I could not see the paper before because there are a great many points I should have liked to discuss, but I believe the best thing to use is a combination of beeswax and plaster; and that it has the advantage over all other materials. I take a wax impression first and then place the plaster on the inside. If the wax is removed the plaster is left in the mouth. It is only about a quarter of an inch in thickness and that is easily broken out and gives a perfect impression. There is another advantage in using plaster; it can be used in all kinds of difficult impressions. I have cases which I will show you this afternoon, impressions quite difficult to take, that I take with plaster and beeswax and it simplifies the operation very much.

DR. T. B. HARTZEEL:

I have one little suggestion to offer in the taking of impressions, particularly in those cases that are extremely sensitive and easily nauseated, that I have found useful and helpful, and that is to sponge the mouth with hydrogen dioxide, get all the mucous surface clean and after you have so sponged it apply a 3/100 solution of eucaïne to the whole palate. That will enable you to take an impression in the most exaggerated cases of that sort. Of course, if the patient has that feeling continually he will not be able to wear a plate, but you can get the impression by sponging the palate with hydrogen dioxide and using eucaïne in that way.

DR. L. P. LEONARD:

I want to give the society the benefit of something that Dr. French gave me, and that is cutting a hole about the size of a bullet in the front portion of the plate, pressing the impression cup well in behind, and then bringing it up toward the front, which squeezes the plaster out of the front and the excess will drop into the little vessel made for that purpose. It is an excellent thing. I use a solution of cocaine and alcohol. The alcohol used in connection with the cocaine counteracts its toxic effect, and it is the best solution that I ever tried. In placing the plate in I try to place it in in the morning and tell them to leave it in until the next morning, not to take it out. By that time the nerves of the palate become accustomed to the plate. I had a case like that just recently. I attempted to put in a plate in the evening and I made a big failure. Then I treated it in the way I have described and dismissed him, which was perhaps a week ago, and he has not been in since.

DR. H. M. REID:

I think it is a mistake to lay down any iron-clad rule for cases of this kind. I claim that almost every case is a law unto itself. I think Dr. Weiss has covered the ground very thoroughly, so I will not make a repetition. There is one point, however, I wish to emphasize, and that is that you had better always spend a good deal of time in adjusting the fitting of the cup. I have seen a dentist take an impression where the fit was the worst you could imagine, and I think it is essential that care should be used to get a cup adjusted for the case. Dr. Hawkinson said he used a

cup a quarter of an inch larger on each side. I think he would find difficulty in getting that into many mouths. I suppose he was speaking about a partial impression. You want to have sufficient space so you can put it together again. One thing Dr. Weiss spoke of, in trimming his cups he said he cuts them off. I take a pair of shears and cut them away. There is a great deal in the kind of cup you use. If a cup is soft you can change it with your fingers, but there are cups so hard that it will take a pair of pincers to move them, and I would not have one. As I said before, I think every case is a law unto itself. I do not agree with him exactly in taking the impression as to using the compound. I claim it is a difficult matter. It is an abnormal condition and it will distort the impression. Dr. Andrews spoke about wax and plaster. He has used that method and is perhaps more successful than I am because he has become accustomed to its use.

In a general way I can agree with all these things that have been brought out. I was reading a little article the other day by our old friend from Chicago, Dr. Haskell, in which he pleaded for more simplicity and less apparatus, and he claimed we would be more successful.

DR. O. A. WEISS (essayist):

I do not know that I have much to say in the way of closing. Dr. Reid speaks of the distortion we get with modeling compound, i. e. distorting the soft tissues. I do not like the unqualified use of the term distortion as it usually implies an ill meaning. I pointed out that an accurate impression is not always a desideratum; that there are cases where we require a compression of the soft alveolar ridge, and this in fact is a distortion but not a distortion in the ordinary sense of the term. This compression of the soft alveolar ridge being required, you will get distortion (if you prefer the term) by the use of plaster if it is properly used. As stated in the paper, those who prefer plaster as an impression material, obtain compression of soft parts by mixing the plaster thicker than is ordinarily done.

As explained in the paper I did not go into the numerous methods of taking plaster impressions. Dr. Andrews says he has better success by combining wax and plaster, and in some cases this is a very good method. Somebody else will have better success by some

other method, etc. In taking plaster impressions I have come to rely upon the simplest method possible. There probably are no more difficult impressions to take than those of irregularities of the teeth, and Dr. Angle, who is famous for his impressions and casts, never uses anything but plaster alone when taking impressions. I did not intend to give an exhaustive treatise on methods, because I felt that the most important points that came under my observation which gave rise to trouble in practice, would be of greater interest to you.

For irritability of the palate, a remedy that is very satisfactory is chloro-phenique. It has an anesthetic action and is non-toxic, and is very pleasant to the patient.

DISCUSSION OF DR. CAPON'S PAPER ON PORCELAIN.

DR. F. T. McNAMARA:

We are exceptionally fortunate in having Dr. Capon come away from Philadelphia to read us this valuable paper on porcelain.

His paper is worthy of more than passing consideration, coming as it does from a man of national reputation.

We are encouraged to hear that Dr. Capon also has had difficulties, when we realize how well he has succeeded. To him difficulties meant that he had covered so much ground and was so much nearer the goal.

My difficulties with porcelain began about five years ago and during those five years I have put in about 400 fillings, and the deplorable part of it is that I have never been fully satisfied with a single one. There are many that I would replace, if possible.

I wish to make this plain statement of facts because the profession in the Twin Cities is not as favorable toward porcelain as we would wish it to be.

While there has been some excellent work done, we have not taken as kindly to the work as we might have done.

I am pleased to hear Dr. Capon state that porcelain is on a permanent basis and as such must be considered by all progressive men. It is only within the past few years that the shining gold crown, which decorated the anterior teeth has been relegated to the molars. It took some time for the profession to recognize the value of the porcelain crown. This is not surprising when we realize that men had put years of their lives and their best efforts into perfecting the gold crown.

It took time and experience to convince them of the artistic merit, durability and strength of the porcelain substitute. Let me call your attention to the fact that Dr. Capon has no place for ready made crowns in his office.

We trust that the future will do for the gold filling in the anterior teeth what time has done for the gold crown.

I am pleased to have such an eminent authority settle the cement problem, because many of our progressive men have held this up as the weak point in porcelain.

Let us realize that to master the many qualities of porcelain requires more skill than in the case of any other filling material and with this accomplished we are in a position to not only insert permanent fillings, but works of art.

As Dr. Capon says, the possibilities of the inlay depend upon the ability of the operator, and with the required skill and judgment the field of usefulness is unlimited.

My experience with regard to the proximity to live pulp has been the same as Dr. Capon's. I find porcelain makes a very comfortable and desirable filling.

Dr. Thompson's paper, entitled, "Cavity Formation for Inlays," should be carefully read.

In this month's issue of the *Dental Summary* there are three excellent articles. "A Comparison Between the Jenkins Porcelain Enamel and the High-Fusing Porcelain," by J. Q. Byram; "Management of the Inlay Matrix," L. E. Custer, and "The Province of Porcelain Work in Dentistry," by Hart J. Goslee.

In closing let me add we appreciate fully the kindness of Dr. Capon in leaving his busy practice and coming here to share with us his knowledge, and to inspire us to better and nobler efforts.

His very presence is a stimulus, and let us hope that he will in the future be as familiar a figure at our meetings as the venerable Dr. Black and the illustrious Dr. Johnson.

DR. C. W. JONES:

I shall say only a few words in discussing this subject. About the year 1891 I had my first experience with porcelain work. I had my attention drawn to it by an article read at the National Convention at Saratoga. I heard of some books on porcelain inlay and I went to work and made some inlays. I found difficulty in

getting the right colors for the inlays, and the inlays would be frequently broken instead of coming out, which shows the adhesive quality of cement in holding the inlay in place. I stuck to it for a number of years and later I have been able to do more satisfactory work, but not as satisfactory as I could wish. I think the trouble is in taking up a work of this kind after hearing so many scraps on the subject, that an inexperienced dentist will take up the work and probably discard it for material that in his opinion has more lasting qualities. In a recent article I read one man makes the statement that modern cement and modern porcelain are the best tooth preservers in the world. That is a statement that will probably carry some off their feet, the same as the theory of extension for prevention we have heard so much about in the last few years, but I have seen results that are a detriment. This taking up a cavity and extending it, making seats and steps and sacrificing good tooth structure is not what it was claimed to be, and the patient is now getting bad results from the operation. In porcelain work I think we should be on our guard and not go too far. I am not discouraging any one in the use of porcelain inlay, but it is necessary to use good, sound judgment; it is as necessary as skill. I wish to say that I appreciated Dr. Capon's paper very much.

DR. T. E. WEEKS:

We are particularly fortunate in having a man before us who, while he is an enthusiast on this particular subject, is so conservative as Dr. Capon. Dr. Capon's paper is a model of conservatism, but he has been able to demonstrate what can be done in this line of work. One of the things which you gentlemen heard him say not once, but several times, this afternoon during the demonstration, was that if it is properly performed it is the best thing for the purpose that can be supplied, but if improperly performed it is the worst thing. There is a note of warning in that statement. I have tried in the lines I have jotted down to direct your thoughts along the line of thoroughly understanding the principles and features of what you wish to accomplish. Do not try to make one of the crowns unless you have a clear conception of what it is going to be and what every step of the construction should be, otherwise it will be of little value. That applies not only to this particular feature of dentistry, but to everything we practise.

Again I want to thank Dr. Capon for the good he has been to me and to the society, and I want to congratulate the executive committee upon its choice. I have been one of the charter members of this society, and I can not tell you how proud I feel when my boys can produce such a meeting as this; the boys who stand by me and whom I love, and who I believe love me, and I am glad to see them before me after all these years of struggle. And I am glad to see the faces of the men who stood with me in the early years of dentistry in this State. It is due to the efforts of the enthusiastic and earnest men of the early days that you today can have such meetings as these.

DR. W. N. MURRAY:

I think my experience with porcelain, perhaps, has been a little overestimated, but I will say this, that among the older members and practitioners this is particularly interesting, but it also appeals to the younger members of the profession starting in the practice of dentistry and who are taught operative dentistry represented by gold, amalgam and plastic fillings. After a few years' practice the young man meets failure in those operations. He finds they are not all that is to be desired in dentistry, and I think perhaps that is one reason why porcelain has entered the field of our profession, and I am frank to say that with the beautiful results that can be obtained with this substance it is an enticing change from the old methods. I believe, however, we must have a very thorough knowledge of cavity preparation and I believe that is the secret of successful inlay work, either of gold or porcelain. I think with a thorough knowledge of cavity preparation and with a correct idea of the stress exerted upon these fillings, studying the whole matter from the standpoint, that we are going to obtain results with the inlay that will far surpass the old methods. I admire the tone of conservatism expressed by the essayist and am very glad to have had the privilege of hearing this paper. It has been a pleasure to me. The essayist expressed himself to the effect that porcelain is not all in dentistry, but it has a wide range, a range that we have never dreamed of, and I think it is not only obligatory upon the younger members of the profession, but upon all of us to study and perfect ourselves in this branch of dentistry as well as in the old methods. In starting in upon this branch do not be discouraged if you do not

obtain results from the outset; you can not expect it. It takes patience and it takes experimenting, and it takes years to become perfect in this work. You do not put in perfect gold fillings when you start; none of us can. As I said to a gentleman the other day, the last half of the life of a professional man consists in correcting the mistakes he made in the first half.

DR. J. O. WELLS:

I have enjoyed listening to Dr. Capon's paper very much. The paper is of such a nature that it does not admit of much discussion. It is a classic and we have all enjoyed listening to it; I have, and I know I speak the sentiment of the Association when I say we have. I hope the prophecy made by the doctor will prove true and that we will have in the future all and more even than he predicts.

There is a great deal that we might learn, however, from a general discussion of the subject. And while I am on my feet I will suggest that an excellent method would be to quiz the doctor freely. I do not care to go into an extended discussion of the subject; I can do this for you any time; but we do not have Dr. Capon with us often and we want to use him while we have him. We all want to ask him questions and there is much that will be of benefit to be obtained.

There is one point I want to speak upon particularly, and that is the crown the doctor advocates. I want to ask a question and the doctor can reply to it when he closes the discussion. This crown when properly constructed, as Dr. Capon says, is an excellent method of restoring a lost tooth, and as he also says, it is a bad method when improperly constructed. The difficulty I have encountered in constructing this particular crown is that in the anterior part of the mouth, in teeth bearing vital pulps, it is practically impossible to cut away enough of the tooth structure at the gingivolabial to get a bulk of porcelain sufficiently thick to hide the platinum matrix. If we cut away enough tooth structure to obtain the desired result, in many cases we would endanger the life of the pulp; and if we do not the platinum shows through. There is a tendency in constructing this crown to have it bulky at this point, which, by the way, is a common defect of many crowns, but I think remarkably so of this one. There is another defect in the jacket crown, we destroy the translucency; and in the anterior

part of the mouth this is one of the most important features. When we use a porcelain veneer over a metal matrix we get exactly the same result we get with a Richmond crown. These two points in particular I wanted to call your attention to and I would like a word from Dr. Capon on them.

As I said at the outset, I enjoyed this paper very much, papers from the doctor's pen are always instructive. He has been so successful in all that he has done that I feel we are to be congratulated in being able to secure his services.

DR. T. E. WEEKS:

I want to add one or two statements. A good many did not hear the doctor's remarks on crown work, and I want to ask the doctor in closing the discussion to be kind enough to again state the kind of body he uses; if all bodies have a sufficient density or ability to cling to the platinum jacket to make them serviceable.

Now just a word in regard to the point Dr. Wells made. I agree with what he said. I hope no one will be misled. I want you simply to observe each case that comes before you where you have occasion to employ porcelain in connection with vital tooth substance and study carefully the character of the tooth and the shades or color of the natural teeth. As you all know, there is a wide range of density or ability to refract the rays of light in the mouth, a great difference, and this problem of reflection and refraction, this shading problem, is one that must be studied very carefully. If the teeth are yellow, they do not present many difficulties and you may employ operations that you could not employ in other cases where more difficulties present themselves. This is a subject that has occupied the attention of porcelain workers a great deal, and it is a difficulty that you will encounter immediately, and I simply wish to throw out the suggestion that you make a careful study of the subject before you employ an operation that may end in failure.

DR. J. O. WELLS:

I did not wish to mislead any one in the remarks I made, and what I said applied to the universal application of this style or any one style of crown. Dr. Weeks says we should study every case. We might say in the case of filling material that porcelain will never supplant gold; we will always have cases where we will use gold.

Dr. Weeks is right when he says that we must study each case separately as to fillings. These are the two difficulties we encounter in using this particular kind of crown. If we have a case where those difficulties do not occur then we may use the crown. Quite frequently we find teeth where we get sufficient thickness, or we find cases where the choice of fillings does not make a great deal of difference. My remarks referred more especially to the universal application of the jacket crown in the anterior part of the mouth.

DR. G. F. ANDREWS:

I do not believe I have anything to say except to compliment the essayist on his excellent paper. I have been very much interested. I have had but little experience in porcelain work except with crown work, but none with jacket crown as the doctor demonstrated today. I think we are very fortunate in having Dr. Capon with us, and I think what he has presented will act as a stimulus to us in our work. I saw a great many points in his work that opened my eyes, and they were very simple, too. I know it will do me good personally and I think other members of the society will receive a like benefit.

DR. O. A. WEISS:

I will say for the benefit of Dr. Todd and others who do not have electricity in their offices, that a gasoline furnace will serve every purpose for fusing any of the porcelain bodies used in dentistry. I have electricity in my office and a Custer furnace, yet much of my work is done with the gasoline furnace. I use the gasoline furnace because it is quicker in its operation than is safe to operate the electric furnace. I use one of the Turner furnaces and it works very satisfactorily. I presume there are other furnaces that work equally well.

There is a question in connection with porcelain inlay work which I am going to bring up more particularly for the benefit of a number of others. I have heard this question asked many times, and it has been asked of me several times today, yet nobody ventures to ask it at this time when some one might answer it for them. The question is with reference to the fees for porcelain inlays. I presume there is a feeling of reluctance on the part of many here to ask questions regarding fees, because as a usual thing the question of remuneration for services in dentistry is thrown in the background in dental society discussions, it being generally treated as

incompatible with true professional topics. Usually this question is treated with scorn and the man who asks it is made to feel that he had better have kept still, but I have observed some instances where those who are most strenuous in scorning this question, rarely fail to exact a very generous fee for every service they render. It is usually men in successful practice—successful particularly in receiving generous fees—who scoff at this question; men whose success in practice is not always dependent upon superior skill as dentists, for we sometimes find that these same men are only mediocre operators. Because one is not blessed with a clientele that can pay generous fees it is no indication that he is not a skillful operator. Much has been said and written during the past few years regarding porcelain inlay work so that one would naturally conclude that it has come to be one of the standard operations of daily practice like gold and amalgam fillings, in fact, some of our porcelain enthusiasts would have us believe that gold and amalgam should and will give way for porcelain only. Now, the uninitiated desire to know something about the practicability of porcelain inlays for the general practitioner, and this is determined very largely by the time it takes to do the work, its durability, and the remuneration he can get. No one would think that a dentist can make a continuous gum denture for the price of vulcanite; and why do we not make continuous gum dentures? Simply because we can not afford to make them for less than it is worth and that is more than the vast majority of people can afford to pay. Now, with porcelain inlay work, the first question is, can they be made in about the same time as gold fillings? I think none but porcelain specialists would attempt to make any such claim. If it requires more time to make porcelain inlays than it does to make gold fillings, then it must certainly require more remuneration and this would at once preclude it to a very great extent in the practice of the vast majority, for there are many people who can not even afford to have gold fillings. Much more skill is required to make porcelain inlays *that fulfill the claims made for them*, than is required to make gold or amalgam fillings, and the man who makes only an occasional porcelain inlay must expect to consume a great deal more time in producing a reasonably perfect result than the man who is a porcelain specialist; he need not be disappointed if he has to try a sec-

ond or third time, consuming possibly a whole day in making one inlay, and receiving therefor probably five dollars. The porcelain specialist would probably do the same thing in an hour, and would probably receive not less than ten dollars for it.

Now what is to be the standard upon which the practicability of porcelain inlay work in general practice is to be judged? Perhaps Dr. Capon can give us a little enlightenment upon this question.

DR. T. B. HARTZELL:

We get in this line exactly what we go after within moderate limits. A man who goes after a little will get little, and the man who goes after more in an honorable way will get it.

DR. W. A. CAPON (essayist):

Mr. President and Gentlemen of the Association: The questions asked or points taken by Dr. Wells are very trite. The matter of translucency is a point that is overlooked by the majority. There are teeth very difficult to crown in this manner, extremely sensitive teeth, with the tight fitting gum that you are all familiar with. There are times when this crown is much more difficult to fit than other times, but suppose you left it out at this particular time, you would still have a great margin to its credit. I do not leave it out because it is simply astonishing when you work along certain lines how much you can accomplish, I do not care what it is. Therefore, I can cut teeth now more easily and with less pain to the patient than I could some years ago. I also know that a little judicious talking to the patient is of very great assistance. You all know that the dentist with small ability and a good gift of gab can accomplish much. Personality has much to do with it. I am simply leading up to the point. If you have a broken down tooth with a live pulp in it and you are afraid to make the application of a jacket crown without considerable pain, it is much better to take your patient into your confidence and tell him what is ahead of him. It is not always advisable to say to the patient, "I am going to cut that tooth off and crown it." You know that means objection, but time and again I have performed the operation when there was nothing to do with that tooth but to face it with porcelain, and the patient was very much surprised when he saw that tooth ready for filling, but in the meantime I had gained his confidence, so I went ahead and finished it, and that is all there is about it. If you tell

that patient that the pulp must be devitalized there is a great deal of hesitation. You may not get as nice adaptation of the neck of the tooth, if you save the pulp, but the defect to your eye is very small. It is very difficult to overcome that defect with yellow teeth and white teeth, and I can only say that we must do the best we can. I did not have any trouble to reach the shade today, and I think you will admit that it was a fair shade in a general way. I was able to give that tooth that dusty effect on account of the metal in the background. I can not always do that, but the fact of the saving of the pulp is the principal recommendation. If you use any kind of a band you must cut it off, and that sounds worse to the patient than cutting the tooth down. In regard to these veneers, you lose a shade in cutting them thin, therefore I think this thought is practicable, learn to cut the outside of the veneer as much as the inside. Cut it on the outside and the tooth will re-gloss. The porcelain I used today I have been using for two years, and it is classed as a continuous gum body with a Brewster base body. I find porcelain has a greater affinity for platinum than for any one manufactured material, and if you take the color out of it that affinity still remains. I showed a specimen today where I could not lift much of it with the finest instrument even after the color burns out. It does not become porous like the rest of the batter. Even where you have a pyrometer you can not overheat it. Where we have a thin material to burnish over the labial side of the tooth you can not do it unless you crown it thin. It must be crowned thin to be burnished and be crimped in. Now you take any circular piece of metal and grind the edge, of course, when it is flattened to a smaller surface it is full of cracks. I prefer to have it as regular as it is possible to have it, using no cavity surface on the broken tooth. You are putting this crown over a defective tooth more than over a perfect tooth, therefore you are likely to have a space in the distal surface where there has been a filling. Then you have to bend that lower edge to turn the porcelain in.

In regard to the question that came up about fees, I do not think that is one for me to answer any more than your neighbor. It is difficult for me to say you ought to be satisfied with a certain sum or mention a sum you ought to receive for such work. You must be governed by circumstances, but I do not believe that a practitioner

in this hall who lives in a large place but occasionally has calls for porcelain work of some kind, and it is then his duty to inform his patient about the position he is in in regard to doing that kind of work. If he is able to do it he is able to do it with a great deal of special attention and time. It is the highest class of work in dentistry, the very highest, and one which requires special care and special appliances. Therefore, you should get more than you can for your gold filling. Make it \$5.00, if you want to make it \$10, make it \$25; that is your business. I do not get \$25 by any means, and I know I can work for a great deal less and still make a good fee. Therefore, you must excuse me from telling you what you should get for a piece of porcelain work. Make a minimum price and do not go below that, because a small piece of porcelain work is more difficult than gold work, and in proportion as the size increases it becomes a less difficult work. If you put in a piece the size of a pinhead it will give you more trouble than if it were the size of a pea.

As I said in my paper, if I was the means of helping some one who was undecided in this line of work I would feel amply repaid for my efforts in that direction. I can only say that I am satisfied with the way you have acted toward me; I appreciate your many kindnesses, and in my many visits to different parts of the country, meeting all kinds of people and societies, I must say that individually and collectively I never had greater attention or so much hospitality tendered me as from you gentlemen of the Minnesota association, and I thank you cordially.

DISCUSSION OF DR. VAN DUZEE'S PAPER, "THE PRACTICE OF DENTISTRY."

DR. F. H. ORTON:

I think the profession of dentistry owes Dr. Van Duzee a debt of gratitude for his paper along this line. The present standing of the profession is due to just such elevating work in the past. The practice of dentistry is a very broad subject. The essayist has touched on many points, and to discuss each point as it deserves would require another day.

The doctor spoke of the feeling of dissatisfaction which seems to prevail among the members of our profession. While I believe that is true to a certain extent in dentistry, I also believe the feeling is universal. I believe this feeling can be found in any walk of

life. I have heard lawyers, physicians, and even bankers say they thought they could be more successful and happier in some other pursuit. About two months ago I heard one of our supreme court judges say that if he could start life over again he would be a farmer. "Distance lends enchantment," etc. It is natural for us to feel that every other calling is better than our own. After all it is only a question of happiness. Philosophers all agree that to obtain lasting happiness man must work. Hubbard says, "Happy is the man who has found his work." The man who feels that he is saving himself in his work can not look for great happiness or success, but the man who can lose himself in his work is the man who will succeed. The man who is continually looking out for number one will fail in such a profession as ours.

The doctor spoke of the subject of diagnosis. I attribute to the lack of diagnosis one of the most important factors in a large majority of our failures. The dentist is not altogether to blame for this, because this subject is entirely neglected in our dental colleges. In looking over the college catalogues I could not find one school that devoted a course of lectures to the subject of diagnosis, while in the medical schools it is considered one of the most important features. I think more than seventy per cent of my failures, and they have been legion, are due to the lack of appreciating the condition of the two arches and their relation to one another. My trouble in this direction has led me to adopt a method of diagnosis before undertaking the care of the teeth, especially where a tooth has been lost. I prepare an impression and occlude the teeth, and this has led me to the conviction that the majority of failures are due to mal-occlusion. We have to do more studying before we start in to do the work. We have to pay more attention to diagnosis.

The doctor suggested the subject of teaching the children the importance of oral hygiene. This has been a favorite theme of presidential addresses for the last few years, with the result of receiving almost universal approval of dentists, but nothing tangible has come of it. I think with the number of progressive men in our association if the matter were once started we would be able to do something, and I hope the president will be empowered at this meeting to appoint a committee to at least start the ball rolling.

It can not be done at once, but it must come by a process of evolution. However, we can at least have the honor of starting the agitation.

DR. J. W. PENBERTHY:

I regret that I am not able to carry more of the points of the doctor's paper. It is along the line that I spoke of yesterday, and it is a subject that I have in my own mind and have on several occasions spoken about very briefly. We as dentists certainly are not filling the position that properly belongs to us. How few of us are able to diagnose the troubles that come to us almost daily. We pretend to do it, our patients think we diagnose them, and fortunately our patients are still alive, some of them minus teeth, but our reputations in the minds of the patients in many instances are all right, while with a great many it may not be all right. One regret I have to express is that the doctor's paper will not appear in anything but the report of the meeting of our society. It is a paper that should be printed in our daily newspapers, and if such a communication could be handed to our daily papers and scattered broadcast throughout the land it would do vastly more good than publishing them in our periodicals. I do not wish to disparage the usefulness of our periodicals, because they do us good, they stimulate us to action, but the public also should be stimulated and become interested. The matter was discussed some years ago in Minneapolis as to introducing lectures on oral hygiene in our public schools. Some one offered to go into our public schools and deliver lectures on hygiene and the care of the teeth of children. Some one said, "If I do that it will be the means of advertising," and the result has been that nothing has been done. I believe in these two cities if the society would start out and endeavor to bring that about it might be done, and it would be the means of doing great good to both the profession and the public.

Before the doctor read his paper I was almost inclined, out of sympathy for him, to make a motion that his paper be read by title, and that we read it in print. I am glad now that I did not get on my feet for that purpose and that we heard its reading. I appreciated every word and I regard it as an extremely valuable paper.

DR. L. P. LEONARD:

I wish to say a few words in reference to us being specialists.

I do not care what we are called, "a rose by any name will smell as sweet." I want to say this, that the fact that a school was founded in this country for the study of dentistry has been one of the greatest marks of progress and one of the greatest benefits to mankind that has, perhaps, occurred within a hundred years. You can study the status of the masses of people in this country on the whole and you will find that the masses are cared for much better in this country than in any place on the known globe. I have treated a great many foreigners, some of them young people, who came to this country. I remember one young woman of about twenty-five whom I treated in the southern part of the State. Her teeth were in a pitiable condition. I asked her why she did not have them attended to in Europe, and her reply was, no dentist. A short time ago I treated a lady in St. Cloud whose mouth was in a still worse condition; she was not able to speak the English language, she had just landed. I said, "Did your teeth decay across the water?" The interpreter said, "Yes." I said, "Why did she not have her teeth attended to in Scandinavia?" The answer was, "No dentist." Another gentleman who came from England had his teeth filled before he left that country. He said he wanted his teeth put in good repair before he came over because he did not think he could find a competent dentist over here. The dentist told him he would find them in every little hamlet. There is perhaps no other State in the Union where the teeth of the masses are cared for so well as right here in Minnesota. True, the profession sacrifices teeth; it is a misfortune, but let me tell you, gentlemen, if the status ever takes place which many have advocated, that a dentist should take a four years' course in medicine and then take a four years' course in dentistry, not 150,000 but 150,000,000 of teeth will be sacrificed. There was an M. D., D. D. S. in Massachusetts made the remark to me at one time, "It is a question whether Chapin A. Harris made a mistake or not. The fact that no monument is erected to his memory as the founder of a school of dentistry indicates that the profession does not thank him very much." It may be true, but I believe in my heart that the country thanks him, and I believe the day is coming when one of the grandest monuments in the country will be erected to Chapin A. Harris.

THE ODONTOGRAPHIC SOCIETY OF CHICAGO.

A regular meeting was held January 16th, with the president, Dr. J. P. Buckley, in the chair.

The subject for discussion was a symposium on removal of pulps from teeth, and their subsequent treatment.

J. P. BUCKLEY:

This subject unquestionably suggests itself to the Program Committee because there has been in the last few years a radical change adopted by the profession in the removal of the pulps from teeth—I do not like the word “destruction” suggested in the title—but there has been a change in the removal, a change in the subsequent treatment after the pulp has been removed. Not so much in the treatment, however, as in the method adopted for the removal of the pulp.

These questions undoubtedly arose in the minds of the committee because of the universal use of this newer method. Doubtless there have been ill results from it, and because we have had bad results from the use of the newer method of removing pulps, we want to find out if there is not perhaps some virtue in the old method. A few months ago I read a paper wherein Dr. Ottolengui, of New York, recorded his observations on the bad results following the use of cocain and pressure, and if there are in this audience any whose observations along this line would lead them to the conclusions this gentleman came to, if you are earnest, honest, sincere and conscientious you would be forced to abandon the use of cocain and pressure for the purpose of removing pulps from teeth. I say if your observations had been the same as this gentleman.

In this month's *Items of Interest* there is a lecture given before the Boston and Tufts Alumni Association by Dr. B. Holly Smith, a man as well known as Dr. Ottolengui, of New York, and he makes the statement that the action of arsenic is not limited to the tooth structure, that when you apply arsenic to the pulp for the purpose of devitalizing the tissue the arsenic will go on and devitalize the tissue at the end of the root. He makes the further assertion, and says he can prove it, that every tooth which has had arsenic sealed in it for the purpose of devitalizing the pulp will be a source of trouble sooner or later.

We have to remove pulps from teeth. We are not justified in removing them by the excision of the crown and driving a wooden stake up through the root canal, as they used to do; no patient nowadays will submit to this operation. We must use, then, one of two methods—the one Dr. Ottolengui discourages, if not in words, by the results of his recorded observations, or else the method whereby Dr. B. Holly Smith leads us to believe we will have trouble in every instance. It is our duty, as practitioners of dentistry, to adopt any method by which we can produce the best results with the least inconvenience to our patients and to ourselves. By convenience I take into consideration, first, pain; second, time. I place the patient, you notice, before I do the dentist himself, although his convenience should be considered as well as the patient's, but we should consider the patient first.

I believe there are virtues in both of these methods. It is necessary for me to use the word "I" tonight, because this subject calls for personal experience, so I may be pardoned for using the personal pronoun. I believe there is virtue in these two methods. There are today bad results produced by the use of arsenic, but I believe there are more lame teeth in the mouths of patients, that have been treated during the last two or three years by cocaine and pressure, than from the old method, the use of arsenic. This is a fact too conspicuous to be unobserved; at least it has been in my practice. When I began using cocaine and pressure I had more pericementitis following than I ever had with arsenic. So we can have bad results by the use of both methods. Both methods are good, it is only a question of selected cases and knowing how to use the method you adopt.

It seems to me there is a distinction that should be understood between these two methods of removing pulps from teeth. First I would say that in every instance we should thoroughly sterilize the cavity. With the older method we *mechanically* sterilize the cavity and with the newer method it is necessary to *chemically* sterilize the cavity. I believe most of you will agree with me that when we began using this new method we had more pericemental trouble than when we knew nothing about cocaine and pressure. But since we have studied how to sterilize the dentine the results are better; since we have learned how to force our anesthetic solution through

the dentine into the pulp tissue and not into the apical space, we can remove the pulps by the newer method without having these bad results.

I will distinguish between mechanical and chemical sterilization of dentine by illustrating the outline you would follow. When a patient comes to you and you expect to devitalize the pulp tissue, you are not perhaps particular in sterilizing the cavity before you seal in the arsenic. If that arsenic does not do anything else it will desensitize the dentine. It may not devitalize the pulp tissue. The patient returns and you take a large, round, sharp bur and mechanically sterilize the cavity by excavating all of the decay which you could not remove at the first sitting. As you drill out the cavity you are drilling out dentine saturated with microorganisms and their poisonous ptomaines. Some of the latter are volatile liquids extremely irritating, so irritating that the ptomaines themselves, without the assistance of the microorganisms, if forced into the pulp tissue will cause pulpitis and if forced into the apical tissue will set up an inflammation in the apical space. In the removal of decay you mechanically remove the ptomaines. On the other hand, if you expect to remove that pulp by cocaine and pressure you can not with the bur excavate the dentine, which is extremely sensitive and saturated with ptomaines and microorganisms. If you force some of the anesthetic into the dentine and then excavate you have forced the ptomaines ahead of the anesthetic solution; if you force the solution strong enough you can remove the pulp tissue painlessly, but it is difficult to know where to stop, and we are liable to irritate the peridental membrane. If you have followed this operation without chemically sterilizing the cavity and have forced your anesthetic solution sufficiently hard to painlessly remove the pulp, in every instance, if you have any sized foramen, you will have apical pericementitis. Why? Because you have irritated the peridental membrane; either your cocaine is a protoplasmic poison, as pharmacologists tell us it is, and the cocaine, even though dissolved in a sterile solution, has reached the tissue beyond the root apex, or else you have forced some of the ptomaine through the apices of the root into the peridental membrane and irritated it.

I am not going to take up much time, but will endeavor to answer these questions: "In what percentage of cases do you use arsenic, and what percentage cocaine?"

I believe we ought to divide our cavities into two classes. I do, at least. Class 1. Whenever we have a large cavity and extensive decay and the pulp is aching, especially if it has gone through an inflammatory stage and we have congestion of the pulp, an exceedingly large cavity and exposure; those cases where we know from past experience that if we seal in arsenic it is going to make the patient wild for three or four hours; and where we know, too, that any anodyne we seal in the cavity, because of congestion of the pulp, will not relieve the pain; in ninety per cent of these cases, I try, where we have an exposure, to chemically sterilize the cavity and remove the pulp by cocaine and pressure, and am usually successful. I want to say that in that class of cavities where the patient has been in the habit of going to the dentist and suffering untold agonies, because the dentist has tried to stop the toothache, or told him it would stop in half an hour after sealing in arsenic, and it ached all night, if you will chemically sterilize the cavity and remove the pulp by cocaine and pressure, and hold it up before the face of the patient and say, "Here is what has been causing all the suffering," there is no other expression the patient can give you so full of happiness. When he asks you what it is, you tell him it is the pulp, that which has kept him awake night after night.

CLASS II.

When I want to remove the pulp from a healthy tooth, to use as an abutment for a bridge, or in pyorrhœa cases when I want to stimulate the peridental membrane by removing the pulp, or in those cases where there is a shallow cavity and where the tooth is not aching and the dentine is dense, and I have not time to force the anesthetizing solution through the dentine into the pulp and remove it at that sitting, in all such cases I use a combination method. I seal in arsenic, expecting it to desensitize the dentine at least, and at a subsequent sitting mechanically sterilize the cavity and finish the operation by using cocaine and pressure. I know many say you can not act upon tissue with cocaine after that tissue has been acted upon by arsenic. But whoever makes that statement is wrong. If you do not leave the arsenic in too long, thereby entirely devitalizing the pulp, you can get the cocaine to act fully as well as though the arsenic had not been applied. By leaving the

arsenic sealed in twenty-four to forty-eight hours the dentine is desensitized, thereby enabling you to make an exposure painlessly. The cases are extremely few where I use arsenic alone.

"What has been your experience with immediate root filling after the removal of pulp with cocaine?" Bad! So bad that I have made it a rule in my practice never to use it. Sometimes, of course, you modify any rule. But I have established a rule that, with few exceptions, I will never, under any circumstances, fill the root of a tooth immediately from which I have removed the pulp by means of cocaine and pressure. I do not believe we are ever justified in filling the root of a tooth from which we have removed the pulp at that sitting by cocaine and pressure. Oftentimes, if the tooth is not sore from arsenic and I can get the pulp out without using cocaine, and can get the canal dry, as we often can, I do not believe there is a better time to fill the root. Everything is aseptic unless you have made it otherwise.

"What are the comparative after results of treatment by the two methods?" I believe we can have just as good success with the use of cocain and pressure as with arsenic. Learn how to use the method you employ. If you are careful, then, in sterilizing the dentine—that is the secret, I believe—and do not pump the anestheticizing solution through the pulp tissue and away past the apex into the tissue beyond the root, I believe the comparative results are about the same. I know that while in my practice it was a conspicuous fact that I had more pericementitis following the use of cocaine and pressure than with arsenic, since I have been careful in sterilizing the dentine and do not use so much pressure in forcing this solution into the pulp and use an absolutely sterile solution, I have not had any more trouble with the cocaine and pressure method, if I do not fill the root at that sitting, than when I used arsenic and knew nothing about the removal of the pulp in this way.

A MEMBER:

I would ask Dr. Buckley what method he employs for sterilizing the dentine; also what treatment he employs for the removal of the pulp?

DR. BUCKLEY:

To sterilize the cavity, use anything that will chemically de-

stroy the ptomaines and microörganisms. As soon as Dr. MaWhinney called our attention to sublamine I began using that. You can use a 10 per cent solution of formaldehyde if you are careful in removing it after it has sterilized the cavity. You can sterilize the cavity with 1/200 solution of sublamine, followed by absolute alcohol. This is what I use. If in removing the tissue by cocaine and pressure the membrane has been irritated and an anodyne is wanted, I seal in oil of cloves or carbolic acid. Where there is much hemorrhage, carbolic acid is the best.

DR. F. B. NOYES:

I am a good deal in Dr. Buckley's position in regard to preparation on short notice, and what I have to say must necessarily be similarly, in the nature of personal experience.

When I got the notice of the meeting and the letter, I set my assistant to going over my records for a few years back to get at the number of pulps I had removed by the different methods and what notes I had about the cases. I knew, in a general way, that for a number of years I had used cocaine more than arsenic; that is about the way I would have said it. I found by my records that I ought to put it considerably stronger than that; I found that out of 118 pulp removals there were seventy-nine removed by cocaine and the roots filled at a separate sitting. There were twenty-two removed by cocaine and the roots filled at the same sitting. There were seventeen removed by arsenic out of 118 or 120, which was a very much smaller number than I would have supposed.

The removal of pulps by any method is a knotty problem to the dentist, at least it may be. It is like a good many other things—there are pulps and there are pulps, there are root canals and there are root canals—but you have a great many different conditions to bear in mind. In some cases it is very easy to get into the root canal, in some cases it is very easy to get out of it again at the other end, and in some cases it is very difficult to get into it and almost impossible to get anywhere near the other end. You have difficulties in both ways, and it is between the devil and the deep sea. If you go through the other end you are going to have trouble; if you do not go very close to the other end you are going to have more or less trouble. So it seems to me, in discussing the methods of removing pulps we must keep in mind those possibilities of trouble.

The first thing I want to say in regard to the cocaine method is to emphasize the statement which Dr. Buckley made in regard to the degree of force and the length of time which is to ensue in forcing the cocaine into the tissue. Briefly describing a typical case of excavation in preparation for a filling, we will say the rubber dam is in place and you are beginning an operation which you expect to finish at the sitting. You do not know the conditions; you begin to excavate the cavity. The first procedure is to open the cavity to the extent to which it is to go; in my practice I extend the cavity to its limits. The next step for me is the removal of the decayed dentine, and in that step you find the pulp exposed. You did not expect to find it. That pulp is exposed fully; you can touch it with the explorer if you want to. You place upon that exposure a very small pledget of cotton, which is moistened with a practically saturated solution of cocaine crystals in distilled water. You place over that a pellet of soft rubber that will stop the cavity, and with a large burnisher, or a large instrument, or with the end of your finger, or something that will practically cover the whole area of the rubber, you place a gentle pressure over that cavity. The patient will knit his brows with pain. You keep the pressure at that, and in a minute by the clock in ninety-nine times out of a hundred the pain will stop, and with that you are done, or ought to be when the patient says it does not hurt any longer. I take away the rubber, the cotton and open the pulp fully and take it out, or tear it to pieces. When you carry the broach forward the patient will wince about as much as when you make the pressure, and there is usually a slight sensation when you remove the broach, and the entire pulp will come with it, or a portion almost always. These are the cases where you have a dry canal to go into, a single-rooted canal. I am not talking about the ones you can not get in. I noticed a good many smiled when I said you went to the end of the root, but in all the easy cases you do go to the end of the root. But my point in that description is simply to avoid the carrying the effect of the cocaine through the entire pulp beyond the apex and through the apical region of the peridental membrane. You do not want to do that; you want to anesthetize the pulp, not the whole side of the face.

If it is a molar you can, from the first application of cocaine,

anesthetize practically the whole of the pulp through the pulp chamber. After the first pressure from the cocaine you can remove the bulk of the pulp without pain. Usually you can not get into the root canal without pain and you must apply cocaine again. That is done by putting in a pellet of cotton, which practically fills the bulk of the pulp chamber, and making pressure which extends to the root canals. That does not need to be kept up for any length of time.

On general principles I do not believe in immediate root filling with any method. Why? Because you have produced a break in the tissues at the apex of the root; you have more or less hemorrhage for a longer or shorter time, and it is very difficult to tell whether you have stopped the hemorrhage at the apex of the root or not. For that reason I make a dressing and wait for a separate sitting for the root filling always. That is the routine, and unless there is some reason sufficient to outweigh it I do not fill the root at the same sitting. But suppose it is a comparatively easy canal to see. You have removed the pulp in one piece, as you do sometimes. After wiping out the cavity two or three times it seems to be perfectly dry; you can enlarge it with a roughened cleaner and it seems to remain dry. It was sterile in the first place. I can see in these cases that it is possible to make a root filling at that time just as well as it ever could be done.

In regard to the trouble afterward: I have had trouble afterward and a good many times it has bothered me beyond any explanation I can make to account for it. I can recall one case of the removal of eight pulps, by cocaine and pressure, from one mouth. They were all exposed through sound dentine for bridgework. None was exposed before the operation began, and all eight of the pulps opened through perfectly sound dentine. It seems to me that excludes the possibility of ptomaines in that case. Out of the eight pulps removed, two developed very acute pericementitis and the rest did not. They were treated exactly alike, and why two of them were sore and the rest were not I do not know. In one of the cases I suspected afterward, when the soreness continued for two or three days, I might have forced my root filling too hard, forced it through the apex of the root. So I had a skiagraph taken, and it showed the root filled nicely to the apex, but not beyond it. So

I do not see any good explanation of the inflammation which occurred. In every one of these cases, without a single exception, the inflammation subsided in twenty-four hours to three or four days, and in none have I had any trouble since. It has only been two or three, or five years at most, and there is plenty of time for trouble yet, but so far they have been perfectly comfortable. I have had exactly the same experience with pulps removed by arsenic. I do not think there is any greater proportion with cocaine than with arsenic. But the greatest thing to me has been that the inflammation and pericementitis occurred apparently as often when cutting into a perfectly sound tooth.

In my experience there have been cases in which it was impossible to obtain anesthesia with cocaine, and I believe that is the experience of every one. I believe the explanation of that is to be found in the condition of the pulp at the time the case presents; that the pulp is in an extremely hyperemic condition, under unusual blood pressure, the blood vessels filled and crowding the tissues. It will be impossible to make that tissue take up cocaine so as to anesthetize the nerve. I have worked and worked over them. In some cases I have succeeded in getting the pulp out by main force and brutality, and in others giving it up, making an arsenical application and getting the pulp out without trouble. As the result of my experience I have come to know that if the symptoms indicate a chronic, long continued inflammation, or an extremely acute hyperemia, and with ten minutes' use of cocaine and pressure the pulp is more sensitive than in the first instance, I abandon cocaine in that case and use either a treatment calculated to reduce the hyperemia and inflammation, or an application of arsenic, depending upon the symptoms which precede it. It is usually enough, in those cases, if the patient has been suffering acute pain for twenty-four hours previously, to make an arsenic application at that sitting. They will have a worse toothache than ever for the next twenty-four hours. But if it is a relapsing pain, appearing and disappearing, and is not aching at the same time, and you make an arsenic application without pressure, you are usually safe; but if you produce pressure with your arsenic application you are almost sure to have pain follow. If the symptoms indicate a condition which is certain to result in pain from the arsenic application, I use 95 per

cent carbolic acid, or beechwood creosote, or after twenty-four hours remove it and try the cocaine again. Often the cocaine will work at the second sitting where it failed at the first. If it does not the arsenic almost invariably will. I have seen one or two instances of trouble following the removal of pulps with cocaine and immediate root filling. One was shown me at the State Society a couple of years ago. It was a lower third molar, from which the operator, a very successful man, had removed the pulp by cocaine and filled the root at the same sitting. His description of the condition for the forty-eight hours following was graphic. At the end of that time he extracted the tooth, and he showed it to me with gutta percha protruding from all the roots. My explanation of that was that in the application of the cocaine he had anesthetized not only the pulp but the peridental membrane and consequently failed to obtain his signal for complete root filling; that is, the symptom of slight pain which he had learned to depend upon as indicating that his root filling had reached the apex, and here he had pushed the root filling through the apex. I believe, on the other hand, there is pain after root filling because of imperfect removal of the pulp, leaving portions in the tissue, either alongside the root filling or beyond it. I think you will always have trouble from both these sources, no matter how skillful the man is, because root canals are not always straight.

DR. FRED W. PARKER:

In consulting my records along the line of this discussion, I find, in answer to the first question, that I have employed arsenic for the destruction of the dental pulp in 23 per cent of the cases and cocaine in 77 per cent of the cases.

As to my experience with immediate root fillings after removal of the pulp with cocaine, I will say that in the very great majority of cases there is developed some soreness in the apical region. This soreness I find varies greatly with the amount of cocaine used and the amount of hemorrhage following the extirpation of the pulp. If too much cocaine is used, that is, if the pressure employed is applied for too great a period and the cocaine passes beyond the apex of the tooth into the apical space, much soreness sometimes develops. In some cases this soreness, no doubt, is due to the action of the cocaine itself, while in others the soreness follows because of

a wounded and lacerated condition of the tissues in the apical space, such a condition resulting because of the passage of the broach through the foramen. When the cocaine has passed through and anesthetized the tissues, such a thing may and does often happen.

In immediate root filling following the use of cocaine in cases in which there was a copious hemorrhage, my results have been usually unsatisfactory, both to my patient and myself. The soreness in these cases results, no doubt, from the engorgement due to the hemorrhage in the apical space.

In the cases in connection with which I feel that I have carried the anesthesia to the right point, in those cases where I find small apical openings to the root canals, and in those cases where there is little or no hemorrhage, I have sometimes resorted to immediate root-canal filling, with very little, if any, soreness resulting. I find that I have practiced immediate root filling in 12 per cent of the cases. However, my experience teaches me to seal in the canal for a few days, some mild sedative agent following the use of cocaine for pulp extirpation. Such a practice gives me the best results.

In comparing the after results of treatment by the two methods, I do not know that my observations and notations are extensive enough to warrant a statement, but I can not say that I should want to take up either method and discard the other. Each has its advantages and disadvantages. One will serve me better at times, under certain conditions and circumstances; the other, better at other times, under different conditions and circumstances.

Neither method need cause any very material after soreness. Each must be employed with wisdom and common sense, with some understanding of the agent, its effect, the proper method of application and after treatment.

DR. W. V. B. AMES:

This is a subject that I approach, it seems to me, with more difficulty than any for a long time, from the trouble I have in systematizing any line of discussion. It was hard for me, in thinking of the subject, to formulate a plan and know where to begin; but the previous discussion has helped me out on that score. I will take up one point which has not been touched upon to any extent. My experience, since we began using cocaine with pressure, and even before that, using cocaine by the so-called cataphoresis has been

such, that if I were in practice and were performing this operation several times a day, possibly I would be driven more and more away from the utilizing of pressure anesthesia for the removal of pulps. In that respect I seem to differ from those who have preceded me. and I try to satisfy myself as to why my experience has been different from that of which I have heard. One conclusion I have to come to is that my experience with arsenic has been much less disastrous and much more satisfactory than that of the average operator. I can only attribute it to the one fact that I find, as I converse with practitioners regarding their methods of using arsenic, that the prevailing method seems to be to attempt to remove the pulp within a week or inside of ten days after the application of the drug. In my use of arsenic for devitalizing the pulp preparatory to its removal in a single root tooth, I would never attempt this removal inside of ten days, and in a multiple root tooth I would leave six or eight weeks and wait for a thorough slough. You do not get a thorough slough in any tooth inside of ten days, and it is apt to be longer even in a single root tooth. In a multiple root tooth you do not often get a satisfactory slough inside of three weeks. If you leave it twice that time you are glad you did so, as least I am. That is an explanation satisfactory to me.

Dr. Buckley says we have to use the personal pronoun because it is simply our experience along these lines. That is an unsatisfactory reason to me. I have had a larger percentage of satisfactory results from the use of arsenic than from cocaine; that is, the indiscriminate use of cocaine in all classes of teeth; but I can join the other gentlemen when it comes to discriminated and selected cases for the immediate removal of pulps. Taking the single-rooted teeth and those having straight canals, like the upper central and lateral incisor, lower cuspid and lower second bicuspid, I would expect to use cocaine by means of pressure or electrolytic process. If there is very little hemorrhage, such as I could check in a reasonable time at that sitting, I would not have any fears in immediate filling of that root canal. If there was a copious hemorrhage which could not be checked I would not, of course, think of filling at that sitting. There are many dressings which can be placed there allowing the hemorrhage to cease and the wound you have made to heal, and you can fill the root at a subsequent sitting and expect a per-

fect result. I could do the same with arsenic and expect a perfect result in these cases, and I have not seen any direful effects from the use of arsenic, nor does it escape from the cavity in which it was placed to set up necrosis. I have never seen resulting sore teeth or lame teeth from the effect of arsenic at the apical foramen or through the sides of the teeth. I know we can occasionally have a lateral foramen and have serious results from arsenic, but, as Dr. Black says in his "Dental Anatomy," a lateral foramen is so rare that they can be eliminated in our consideration of teeth. One might practice a lifetime without meeting one. I would not expect to properly remove the pulps after anesthetizing with cocaine and not having a slough of that tissue. If any gentleman can do it he is more fortunate than I was when I was attempting to do these things. If I had soreness I did not attribute it to infection, but to not removing all the pulp. In getting the upper fourth or fifth of the pulp from the root canal and in studying the size and shape and course of the root canals of some teeth it is very easy to understand and appreciate how it would be the natural consequence that four-fifths of the pulp should come away and the other fifth should remain, that the fracture or tear should be at some other point than the apical foramen, which would easily account for its being impossible to thoroughly fill the roots at the same sitting, and it would account for the soreness which we have within the root canal. If the patient subsequently has sore teeth, I conclude that I have left a minute portion of that pulp in place. Now, if that pulp be destroyed by arsenic, be devitalized and left for a sufficient time for the actual sloughing to take place at the apical foramen, and if that pulp be absolutely loosened from the walls of the pulp chamber, it is a comparatively simple matter to entangle a broach within the fibers of the pulp and know that you have the entire pulp, because as it comes away you see the difference in color and texture, showing where the sloughing took place, whereas you might take out the same pulp after anesthetizing by cocaine and from the form and length of that pulp you might think you had gotten the pulp from the extreme apical foramen, because it seemed to taper down to such a small diameter and looked very much as if it should be the entire pulp.

I have talked to a good many gentlemen regarding their suc-

cess in this line of treatment, and recently heard a very plausible statement from a gentleman who is very successful, who employs several operators and in whose office a great deal of this sort of work is being done. He attributed his success to the fact that he followed up the removal of the pulp by the application of 50 per cent sulphuric acid. In all those cases where there might be a suspicion of pulp left at the end of the root he counted on burning the balance and claimed to have almost universally good results.

I hope the gentlemen who follow me will give their experience in treating the multi-rooted tooth as compared with the single-rooted tooth.

DR. GEORGE W. COOK:

I shall only touch upon one point in regard to the removal of the pulp by pressure anesthesia. There is one thing that has not been brought out, and that is the application of cocaine to pulps in which we have a secondary dentine formation, and the difficulty of getting these cases anesthetized. Dr. Noyes spoke of cases in which he was unable to anesthetize the pulp. I have found that about 10 per cent of all the cases where I attempted to remove the pulp by pressure anesthesia I was unable to get the pulp anesthetized with cocaine. In a few instances I have observed that this was due to a calcific formation in the pulp next the decayed cavity, and I have good results in these cases by the application of sulphuric acid. It is not as painful as you might think. With a pledget of cotton make an application and wait for a few minutes, then wipe the cavity out with carbonate of soda, and many times you will be able to get the pulp anesthetized. I should say that in about 60 per cent of the cases in which we have a good pulp there is a calcific formation there of some character. You may be able to expose a portion of the pulp, you may be able to get hemorrhage, but at the same time the conditions have produced an irritation sufficiently long to cause a formation, and in that way you have a diseased pulp, and in many of these cases you can not get anesthesia sufficient to remove the pulp at that time.

I started out three years ago with the pretty general use of cocaine as an anesthetic agent in the removal of pulps, but I have been gradually going back to the arsenical treatment. I make as thorough a study of my cases as possible, and if I have a pulp I

wish to remove, where there is no decay, where I can reach the healthy pulp, I feel pretty positive that my treatment with cocaine will be a success, provided I do not do all the things that have been mentioned here, such as force too much cocaine in. I feel pretty safe in removing that pulp, and, if hemorrhage can be stopped at the time, filling the root at that sitting. But I am gradually going back to the old method. Perhaps it is because I am not as successful as some of the others in removing the pulp. But that is my personal experience. I have better results, I feel surer of my tooth, regardless of what Dr. Smith may say about arsenic traveling all over the body. I feel that I can make an application of arsenic to the pulp, and that I do not have to wait till it sloughs every time. However, the digestive process is a very good one in some cases, but in cases where I feel that I have a diseased pulp I feel safer in the application of arsenic than cocaine.

Dr. Buckley mentioned the possible forcing through of ptomaines. I think the forcing through of the cocaine is much more detrimental, perhaps, than forcing the ptomaines that are present in the dental tubuli. Cocaine is a poison, and therefore if it is forced beyond the apical root end you can rest assured that you have established, beyond a question, a diseased condition, because of which that tooth will have to be put at rest for at least forty-eight hours before you are safe in operating on it again, and in many instances a longer time would be better.

Where I use cocaine and pressure to remove the pulp I invariably sterilize my cavity and pack cotton to the apical end or as near the apical end as possible, and leave it there for forty-eight hours, sometimes four or five days. But in half of my cases I do not feel safe in filling immediately after extirpation. There are some cases where I can do it, but my observation has been that the best treatment is to make an application and see that the root canal is filled with something until the soreness has disappeared. You can pack cotton in—that is about as simple a thing as any—but if the pulp canal is left open when your patient returns, you will find, in the majority of cases, that the tooth is just as sensitive as when you removed the pulp. That has been my personal experience.

The treatment Dr. Ames mentioned, after removing the pulp,

the application of sulphuric acid, I have tried, and I think it is the worst thing I ever tried. I may have been wrong, but I have studied this matter over and philosophized somewhat in regard to it. Sulphuric acid, of course, feels the attraction of moisture, and if you have removed part of the tissue from the pulp canal and you make an application of sulphuric acid it is liable to go far beyond your expectation. That seems reasonable. And upon that theory I reasoned out the application of sulphuric acid previous to the application of arsenic or cocaine, in order that I may have a clearing up of the débris and also sterilization, which you can not get with the majority of things which you apply to teeth. Most of the things ordinarily used bacteria do not care anything about; they live there just the same; but sulphuric acid acts upon the protoplasm of the bacteria and opens up the way for cocaine or arsenic to penetrate. I simply suggest that as being successful in my hands.

DR. C. P. PRUYN:

It is wonderful what a variety of experiences have been reported this evening, and if we were to take several days I suppose we would have a greater variety.

I have not used arsenic in the devitalization of pulps for ten years. I use cocaine and pressure altogether. I commenced using it shortly after it was demonstrated to us by Dr. Funk, who I think is here this evening. I think many of you do not know him and that he ought to be presented to the Society. I therefore move that Dr. Funk be presented to this Society.

THE CHAIRMAN:

Dr. Funk, will you come to the front? I have the pleasure of introducing Dr. L. L. Funk, to whom we will listen on this very interesting subject.

DR. L. L. FUNK:

This is the first time I have attempted to speak before an audience of this kind, but I will try to tell you briefly how I came to use pressure anesthesia.

When I attended the American College of Dental Surgery, early in 1890, Dr. Ingersoll gave us his experience in trying to compress water when a boy. He had heard that water could not be compressed, but he had an idea that it could be, so he bored a hole in the end of a log and filled it full of water and drove in a peg. When the

peg went in he was satisfied that he had the water compressed, but upon further investigation he found he had driven the water through the log.

It occurred to me at that time that as the log was porous and water could be driven through it, something might be forced through teeth, as they are also porous.

I did not have an opportunity at that time to experiment along this line, but kept studying the subject and talked with several of my friends about it. When I went into practice, the latter part of the same year, I began to experiment with cocaine and other drugs. I had heard that cocaine has no effect when placed on the external skin, which I found to be true under ordinary circumstances. I had a wart on my knuckle. I saturated a pledget of cotton with a 10 per cent solution of cocaine, placed a rubber tube over the stem of my chip-blower, with the cotton in the other end of the tube, put the tube over the wart and brought pressure to bear on the cocaine. When I thought it was forced long enough I cut the wart out completely with a pair of scissors without a bit of pain. This encouraged me and I continued to study how we could force cocaine through the teeth. After devising different instruments which did not work very well, it finally occurred to me that a cavity in a tooth was advantageous to this operation from the fact that the walls of the cavity would confine the medicine. I tried that. And the first tooth on which I was successful was an upper central incisor. The pulp seemed to be, as nearly as I can recollect, about half suppurated away. I placed the cocaine in the cavity, covered it with a piece of soft rubber, using a burnisher to force the cocaine in, and took the pulp out without pain.

This success further encouraged me, and I will say that I have never performed an operation with pressure anesthesia more successfully than I did in that case. I went on with the experiments and next tried to force cocaine through dentine, which was harder to do.

Subsequently I operated on all the teeth from the incisors to third molars, in some cases with very good success and in others none at all. Although I have studied the question a great deal, I have never been able to decide why I have been successful in some cases and unsuccessful in others. No stage of inflammation seemed

to interfere with the success of the operation. In only one case has it been necessary to extract a tooth in which I had used pressure anesthesia; that was a lower third molar.

I have noticed that where I was able to operate on either one or both parents I have also found the children susceptible to cocaine. I found, also, that some brands of cocaine are practically worthless for the operation.

Before Dr. Edmonds left the Chicago College of Dental Surgery he and a student came to my office, where I demonstrated the operation to them. The young man came back a short time afterward with a patient with whom he had not been successful. He brought his cocaine along, saying that he got it of some firm that made the drug and who assured him it was fresh. I tried to operate on the patient, using his cocaine, but without success. I then used my own and was successful.

Many members of the profession saw fit to ridicule the statement that I could perform the operation in so short a time as claimed, but I have timed myself and have demonstrated this satisfactorily before the Haskell Post-Graduate School. I have anesthetized a pulp in eighteen seconds, and from the time I placed the cocaine in the tooth until I had the pulp on the broach consumed seventy-five seconds—that was where I had an exposure. In cases of healthy teeth I have gone through about $1/16$ to $1/8$ inch of dentine, and had the pulp on the broach in ninety seconds by the watch.

As to operating where arsenic had been applied, I have a case in mind of two upper central incisors where arsenic had been applied to one tooth and not to the other. A Mr. M. M. Kerr, of Detroit, came in just before the patient was due, and I told him what I expected to accomplish. He gave me a smile of unbelief and had started out just as the lady came in. I said, "Wait a minute, please," and got him to hold the watch. In two and a half minutes each I had these pulps on my broach.

Finally, I do not know what more to say about this subject than that I have had varied success and failures, as you have had, but I have noticed that where there appeared to be a pericementitis it has passed away in a short time. I have filled roots immediately after the use of cocaine by pressure and had good results; in other

cases bad results. I have done the same where arsenic was used and got both good and bad results. Let me say to those having trouble: Before applying the cocaine I put a few fibers of cotton on a broach, dip that into carbolic acid and have it lying ready, and after I get into the pulp I always send the broach in the first thing, so that if the pulp is not thoroughly anesthetized I am certain the part touched with the acid will be anesthetized next time. If there is a little sensitiveness I give the broach a quick push, and that cauterizes the balance of the area, and I find I can get the pulp out without further trouble. I generally try to guide the broach down along the wall of the pulp canal, sliding it between the membrane and the surface of the root.

DR. C. P. PRUYN:

I will not detain you more than five minutes, but I must have your attention for that time.

I think it is about ten years since I commenced the use of pressure anesthesia, and I use it altogether, having abandoned arsenic. I do not always anesthetize a pulp in forty seconds; sometimes it takes several minutes before I succeed, but it is more satisfactory to me than the arsenic method and the after results are more satisfactory. If I can remove the pulp and prevent any serious hemorrhage, and there is no pericemental inflammation, I fill at once. After the removal of the pulp, if necessary, I apply sulphuric acid, which enlarges the opening. I have two positive chemical actions; one acts specially to make the canal larger, the other acts upon the animal tissue. Then I follow with alcohol, then probably use oil of cloves, then I use more alcohol and displace the oil of cloves. Alcohol is a very good germicide; it has an affinity for moisture and will go where other liquids will not go. I leave it there and then put up some sandarac varnish made antiseptic by oil of cinnamon and oil of cloves, 2 per cent of each. When the sandarac varnish comes in contact with the alcohol, which has gone up where nothing else will go, the alcohol carries the varnish into these tortuosities and is left there. I take my gutta percha cone and crowd it in place. The sandarac varnish acts as a lubricant; it clings to the sides of the canals, the gutta percha shrinks upon itself and makes a globular mass in the center of the canals. The sandarac method I got from Dr. P. J. Sandarac. He said he

had used it several years and it had been very successful in his hands. At first I thought it was heterodox, but I began to reason out how alcohol acts. If some of the pulp is left in the canal, and we are not sure of getting it out, the alcohol acts as a preservative; after that has gone into the tissue and the varnish with it, made permanently antiseptic, we have something there which has been very satisfactory in my hands.

DR. JAMES E. KEEFE:

During the cataphoresis epoch I discovered the advantage of using carbolic acid by the pressure method for controlling hemorrhage and sterilizing any particles of pulp tissue that I may have been unable to remove. When pressure anesthesia was suggested in place of the cataphoric method, my experience with cocaine was not a satisfactory one. I did not have the success with it that others claimed to have, so I substituted carbolic acid for cocaine, and, while it requires a little longer time to produce the results that some of the gentlemen who preceded me claim they can secure by the use of cocaine, I much prefer to use it and believe that by its use many of the objectionable features to which our attention has been called, particularly that of forcing ptomaines into and beyond the pulp tissue, are overcome. Some may argue that the ptomaines will be forced beyond the root canal before the carbolic acid reaches them, but this I doubt, as it is not borne out by clinical experience.

As a matter of precaution I do not attempt to immediately fill the root after removing pulp that is destroyed, unless it is necessary to do so. We do not know positively just what takes place in the end of the root canal when particles of sterilized pulp are left there, but from experiments I have made I judge that this tissue is removed by the phagocytes, just as any other sterile tissue is removed in other parts of the body and new tissue provided in its place. It may be argued that, owing to the favorable circulation in other parts of the body, the phagocytes have a better opportunity to destroy sterile tissue than they have in the root canal, but the fact remains that a large percentage of pulps are not removed in tortuous root canals and a great percentage of those left there are made sterile. Those that are not sterile will be the cause of trouble sooner or later, possibly in the form of a so-called "sore" or "lame" tooth, but in most cases in the form of abscess.

In certain cases which I have had under my observation, in which I knew positively that all the pulp tissue was not removed, but thoroughly sterilized, the teeth have not been sore, nor have they given any indication of trouble after several years.

I do not wish it understood that I advocate the practice of leaving pulp tissue in a root canal if it can possibly be removed, especially in a single-rooted tooth, for at some future time it may be necessary to crown such a tooth and some unsuspecting dentist may reach the end of the root filling with an instrument that is not sterile and cause trouble. I also believe that it is very much more disastrous to any tooth to force a filling beyond the apex—as is so often done—than it is to not have the filling quite reach the apex, providing the canal is sterile, as in this case I believe that eventually the end of the root canal will be filled with healthy tissue, for nature fills all vacuums. The chance of infection through circulation when there is a particle of sterile pulp left in the root canal is so slight that it is scarcely worth considering.

DR. C. R. TAYLOR, Streator, Ill.:

I remember once hearing a story told of a Frenchman who was selling medicine for exterminating bugs. He went to a lady and said, "I have something here to exterminate vermin." She asked how it worked and he said: "You catch the bug, then you tickle him under the ribs, and when he opens his mouth to laugh you put the powder in his mouth and he sneezes his head off." She said, "Why, I could just as well kill him by pinching him to death and quicker." The man said, "Oh, yes, that is a good way, too." So there are several ways of doing good if you do it the right way. My experience has been largely as detailed by Dr. Parker and Dr. Ames. I live in the country, and have used arsenic for the last thirty years, and I have never seen the terrible results Dr. Smith has. Dr. Reid just said to me arsenic was first used for destroying pulps in 1836. Is it possible the dental profession has been using arsenic all these years with such dreadful results and that they would continue its use?

My experience with arsenic is that I want it to stay in the cavity two or three weeks anyway, and have had it remain in cavity for several months with very good results in the extirpation of the pulp. Then I find, when I remove the pulp and pull away that sloughing tissue, if there is the least trace of vitality at the apical portion, if

blood shows, I can fill that root immediately. I have had some very happy results in the use of cocaine and some very unhappy ones. In my experience, to get the best results I thoroughly open the cavity, rinse it out with warm water, then use dioxygen, then adrenalin, then use cocaine under pressure, and I can not get as good results in any other way.

Where I can thoroughly extirpate the pulp and I am sure the cavity and canals are in a perfectly aseptic condition, I fill at once and get good results. Where I can not get the results with cocaine I use carbolic acid on a few shreds of cotton, passing it up the root canal and holding it there until it cooks the pulp tissue to death. If you are going to torture them do not torture with cocaine, but use carbolic acid, for it is more effective.

I bought at Rockford of Mr. Kerr his universal canal cleansers, which laid unused for two years in my case. They have a little ball on the end and are about an inch long, very fine twisted, and I can work those down into the mesial canals of lower molars when I can not get anything else to do it. By being careful, turning and working and filing, just as you use a rat-tail file, you can get down to the apex of the root, which I have not been able to do by any other method so completely. They are assisted often by using the sulphuric acid treatment and peroxide of hydrogen.

DR. A. H. MURDOW:

I wish to call your attention to a point that has not been brought out in the discussion.

I refer to the influence the general circulation has on the absorption of drugs placed in contact with the pulp.

For example, when it becomes necessary to devitalize with either arsenic or cocaine it occasionally happens that it takes a long time to get results and is very painful. Under these circumstances I usually find a sluggish general circulation evidenced in the patient by cold extremities.

In reference to Dr. Ottolengui's article on pressure anesthesia, either I read it wrong or Dr. Buckley misunderstood it.

I took it that he discouraged the use of cocaine by pressure in those cases, for instance, where the pulp had partially sloughed and where the application of force would be likely to cause pain in the apical region by infection.

DR. GEORGE W. WHITFIELD:

I wish to emphasize one thing brought out in this discussion. That is, the use of carbolic acid after the removal of the pulp. I have never had a case of soreness or any trouble following immediate root filling, after removing the pulp under pressure anesthesia, where I thoroughly used carbolic acid in the roots before inserting the filling.

My theory is that in the removal of the pulp under pressure anesthesia we tear the portion we catch on our broach from the portion which enters through the foramen, leaving a ragged, torn stump with life in it. Cauterizing destroys this torn portion, which is the exciting cause of most troubles in immediate root fillings.

DR. J. H. WOOLLEY:

I would like to have, some time in the future, an answer to some questions regarding the use of sandarac with gutta percha in root filling. In some experiments it has been found that in sandarac varnish there were three reactions, one containing a bitter principle that was soluble in water and can be oxidized, and the question I would like to have answered is, what becomes of the sandarac after a while?

DR. R. B. TULLER:

I have had some experience with pressure anesthesia and cocaine and it has been such that I have drifted away from the use of arsenic almost entirely, although I have found a number of cases where I have been unable to produce anesthesia with the pressure method. That has been the experience of almost all the operators who have spoken tonight, and as a last resort we have fallen back upon arsenic. But in some of these cases I have found the arsenic as inefficient as cocaine. In getting into the tooth afterward I have found that the probable cause of the obstinacy was secondary dentine, as spoken of by Dr. Cook. I think this cut some figure in one particular case I had where there were two teeth to treat at the same time in the same mouth, and neither would come under the control of cocaine after quite a long effort. I then applied arsenic, sent the patient away, and when she came back both teeth were as sensitive as ever. I repeated the cocaine, and after getting into the pulp chamber found both pulps entirely calcified. That would give

a reason, it would seem to me, why neither treatment was effective. Usually if we have sensitive dentine and do not succeed with cocaine we do not know what the matter is, but in this case I got in, eventually, and found out that the cause was a calcified pulp.

I want to relate an experience and have it go on record with the rest you have said about pressure anesthesia. I had a patient come in one day at an inopportune moment, when I could not well attend to him, as I had just started a gold filling for another patient, and I did not want to stop and attend to such a case. He said he had a toothache and he could not go without its being cared for. The patient in the chair volunteered to get out. My first thought was to prod the pulp and produce hemorrhage and relieve him in that way, but on second thought I applied cocaine with pressure, and after a moment I asked him if he felt anything. He said, "No, the pain is all gone." I kept up the pressure until I was satisfied, then I packed into the cavity, after opening the pulp thoroughly, gutta percha, good and hard, and sent him away. I told him if it pained him to come back in a couple of hours, if it did not to come the second day, and I would remove it. I expected him back within an hour with a harder toothache than before, but, to my surprise, he did not show up again until the second day, and I found the pulp entirely dead; it had lost its circulation and was absolutely dead, and I removed it without trouble or pain. He said it had not been uneasy in any degree.

That was an experiment I employed on the spur of the moment, but since then I have tried it in several other cases with as good results, and in no cases in which I have used it have I had any trouble. I give the experiment for what it is worth. It might help in an emergency.

I have had the same experience as others in filling roots after pressure anesthesia, and in all of the cases the soreness has disappeared in three to four days at the most. When roots are left twenty or forty-eight hours before filling there is rarely any soreness. I have never had one return with an abscess. I had occasion to take the pulps out of seven or eight teeth for bridge purposes, all perfectly sound—no cavities. Used pressure anesthesia and got the pulps out of every one without pain. The bridge has been on two years, with no soreness whatever.

I would ask Dr. Pruyn how he would confine the cocaine in the mesial canal in an upper molar? I had a case of that kind and could not confine the cocaine at all.

DR. C. P. PRUYN:

In cases with large open cavities where I can not get walls I make walls with cement, then make an opening as though I was drilling into a perfectly sound tooth. I had to cut my remarks so short I could not make myself understood, but at some other time I should like to consider this question and get some good out of it. It is a very interesting question that comes up in daily practice.

LETTER FROM DR. HOFHEINZ.

Rochester, N. Y., March 6, 1905.

EDITOR DENTAL REVIEW:

Dear Doctor—In the February number of THE DENTAL REVIEW I find the report of my paper read at the Second District Dental Society of the State of New York.

Your able correspondent misunderstood one phase of the paper regarding the filling of labial cavities. I have advocated the filling of labial cavities with *porcelain* and not with gold. I enumerated the exceptions of those cavities which, 1st, are due to erosion; 2d, the extremely small cavities frequently found along the gingival line, due to an occasional follicular acidity, and not the more continuous one which is apt to produce erosion.

The same error was conceived by some gentlemen who discussed my paper at the meeting, and was probably due to the fact that I *first* spoke of the exceptions and mentioned the rule afterward—a literary process which is faulty and which I should have avoided.

Very truly,

R. H. HOFHEINZ.

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EDITORIAL.

THE LEWIS AND CLARK DENTAL CONGRESS.

The dentists of the Pacific coast have grasped the occasion afforded them by the Lewis and Clark Centennial Exposition to hold a monster dental meeting at Portland, Ore., July 17, 18, 19, 20, 1905. The various committees have been duly organized and the way the men are going to work would seem to indicate that they are determined to make of this the greatest dental meeting ever held in the West. There is apparently a most cordial co-operation of the dentists of all the coast states and British Columbia, and the outlook is favorable for a signal success. We wish to urge the members of the profession in the middle states and in the East to take an active part in this congress, and thus help to cement the friendship of the profession from one end of the land to the other. The men of the coast deserve our hearty support in this undertaking, and we can do dentistry no better service at this time than by going out to Portland in July and lending our aid to this great meeting.

Aside from the professional advantages to be gained it will furnish one of the most delightful pleasure trips on the continent during the summer months. The climate out there is ideal and the points of interest innumerable. The railroads have made a round trip rate from Chicago of \$56.50, permitting different routes going and returning, with a ninety-day return limit. Such an inducement as this should tempt every member of the profession to cancel his dates for July and take his wife and babies out to the coast. A feature of the trip is the privilege—to those who desire—of visiting the famed Yellowstone Park, the most noted national park in the world. This can be done at a very reasonable additional expense.

We ought to take out from the vicinity of Chicago a delegation of at least one hundred members. No such rates and inducements have ever been offered, and in addition to this we are promised special sleeping cars for our exclusive accommodation on the Pioneer Limited of the C., M. & St. P. Ry., leaving Chicago from the Union Passenger Station, Canal and Adams streets, at 6:30 p. m. on any day we select to start. These tickets will be on sale July 6, 7, 8, 11, 12 and 13.

Tickets at above rates are good returning through Ogden and Colorado or via the Canadian Pacific Railway through Vancouver—two days of the most magnificent mountain scenery in the world. We have read many descriptions of this trip by the most eloquent writers, and then have been told by those who have been over the route that no one has yet done the subject justice. In passing we may say that if the editor can arrange to go he will try his hand at describing the trip for the readers of THE DENTAL REVIEW. Passengers have the option of using all rail between Seattle and Vancouver or steamer through Puget Sound without extra cost.

It would be a favor if those who contemplate going would communicate with the editor, because he wants company and lots of it. We ought all to go together and take Portland by storm.

For books descriptive of scenery along the line of the Northern Pacific Railway and Yellowstone Park, address C. A. Matthews, G. A. P. D., Northern Pacific Railway, 208 South Clark street, Chicago. For books descriptive of scenery along the line of the Canadian Pacific Railway, address A. C. Shaw, G. A. P. D., C. P. R., 228 South Clark street, Chicago.

For full information regarding tickets, berths, etc., address C. N. Souther, General Agent, C., M. & St. P. Ry., room 315, Marquette building, Chicago.

The general committee of the congress has as its chairman Dr. Norris R. Cox, Abington building, Portland, Ore., and secretary, Dr. Arthur W. Chance, Dekum building, Portland, Ore., who will gladly give all particulars connected with the meeting. The chairman of the essay committee is Dr. S. J. Barber, Portland, and the chairman of the clinic committee is Dr. G. H. Nottage, Portland. Send in your names to these gentlemen for an essay or a clinic, and let us show the profession of the coast that we are cordially with them in their enterprise.

PRACTICAL HINTS DEPARTMENT.

EDITED BY G. W. JOHNSON, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, THE DENTAL REVIEW, 55 State street, Chicago, Ill.]

Rubber Bands:—Use rubber bands instead of floss silk for cleaning between the teeth. Also use rubber bands for ligature to hold rubber dam in place. The No. 12 Faber bands will be found convenient. M.

A Test Question:—In deciding between different processes of replacing teeth a good test question is, Which work is most likely to be still in service ten years hence?

MARK G. McELHINNEY, Ottawa, Canada.

Grinding Roots for Crowns:—In grinding roots for crown and bridge work it will be found that narrow stones, not over one-eighth inch in thickness, cut quicker, cleaner and do not jar the patient nearly so much as the thick stones do.

MARK G. McELHINNEY, Ottawa, Canada.

Toothpicks:—Any medicine which corrodes steel instruments, such as sulphuric acid, iodine, etc., also the acid liquid of cements, may be carried conveniently on the point of a small wooden pick, with or without the addition of a bit of cotton fibre. For carrying medicine to a lower root canal a piece an inch long or less may be cut off and held with pliers. They are also very economical, for anyone who lunches at a restaurant may keep supplied from the little vial at the cashier's desk. If this should trouble a sensitive man's conscience he could buy a nickel's worth each year. But the restaurant method of supply has a peculiar charm.

GARRETT NEWKIRK, Los Angeles, Cal.

Lancing a Lower Third Molar:—It seems strange to me so few realize that lancing the gums over an unerupted tooth is a serious thing. Usually this operation is incorrectly performed, especially

when the lower third molar is the tooth to be operated upon. To make a crucial incision does little, if any good, for the tissue soon heals over again. A tooth may push up if given a chance by cutting out a square piece of gum, but not always, and when this fails a large bur should be employed to cut away the process. This will not be painful under nitrous oxide. I have used cocaine but very little is necessary and none must be spilled from the syringe, as it is so close to the throat that it is easily swallowed and you know the rest.

HOMER ALMON.

Making a Plate Line on a Model;—Usually this is accomplished by making a mark with a pencil on the model where the border of the plate is intended to extend. The wax base plate is then trimmed so that the edge conforms to the outline of the mark. This would be satisfactory if the model and mark could be preserved after vulcanizing, but as this is impossible, it is necessary to resort to some other method to accurately determine the location of the correct edge of the plate after it has been vulcanized. This is easily accomplished by cutting a small groove in the model at the border of the plate. The rubber will sink into this groove and show distinctly after being taken from the flask, and the operator can easily trim the surplus rubber from the plate with a feeling of security.

I. T. O. R.

Adjusting a Justí Crown:—After removal of the pulp or putrefactive matter from the canal I seal in a treatment consisting of formalin and creosote, equal parts, cleared by a few drops of absolute alcohol. At the next sitting I mix one or two drops of this compound with as much precipitated chalk as will make a thick creamy paste in which I dip a small fiber of cotton and carry it to the apex of the root, sealing it perfectly. The end of the root is now ground to the proper shape well under the margin of the gum and the canal enlarged with suitable burs, leaving it tapering, to correspond with the pin. The pin is now inserted into the canal and the crown placed over it and held with the finger. Any wrong direction of crown and pin is now easily corrected by bending the pin, which never breaks. Any rocking motion may be corrected by grinding the crown. I next have the patient bite and grind the crown where necessary, paying no attention to the hole in the

crown which receives the pin. Experience has taught me that grinding through to this hole in no way impairs the strength of the crown. I now proceed to set the crown, using quick setting cement, and introducing as much as possible high up into the canal. The pinhole of the crown is filled with cement and the pin inserted into the crown. The crown is then placed in position on the root and pressed steadily and gently to place as a whole.

V. VON UNRUH, New York, N. Y.

Something New for Porcelain Technic:—Probably the greatest drawback to the practitioner, as well as to the student, in learning



Fig. I.

Cross section.
form.



Fig. II.

Root End view of root
form.



Fig. III.

Root form with porce-
lain in position.

the technic of porcelain crown construction, has been the labor, time and expense of constructing the metal frames. A recent invention



Fig. IV.

Bridge form with porcelain
attached.



Fig. V.

End view of
support for porce-
lain while in the
furnace.



Fig. VI.

Cross section of
support form.

by Dr. C. L. Townsend, of Los Angeles, has overcome this trouble. The outfit consists of ten cross sections of root forms, Figs. I, II and III, and two for bridges, Fig. IV. The forms are composed of a porcelain composition with a stem or handle formed on the

bottom for convenience in handling. These stems also hold the crown in position on the tray—Figs. V and VI—while in the furnace. By the use of these forms a crown can be built up entirely of porcelain, and carved for the reproduction of any given natural tooth form. It enables one to not only study the forms of the different teeth, but also the shrinkage of the porcelain, the color problem and the manipulation. When one becomes expert in the carving of these teeth and the selection of the proper shades, there is no doubt in the writer's mind that a better looking and as strong a crown can be made as when a facing is used. The frames are constructed as for an ordinary crown, but with additional supports to retain the porcelain, and when the shrinkage takes place it will be found that the porcelain is firmly attached to the pin. To the practitioner who lives some distance from a supply house this will mean considerable time saved, and it will not be necessary to select a facing, grind it to position, investing and soldering of same. Many have trouble in soldering their facings with platinum solder and by adopting this style of crown soldering is not necessary.

When the frame is constructed you are ready to begin with the porcelain. For the teaching of students in our colleges I consider it the best suggestion that has ever been made on account of the small cost and the number of crowns that can be constructed by the students. Of course it is necessary to have them make metal frames and use facings but about two such constructed frames will be sufficient for the metal technic.

LEWIS E. FORD,

Los Angeles, Cal.

DOMESTIC CORRESPONDENCE.

LETTER FROM DR. A. W. HARLAN.—THE DENTAL PULP.

TO THE EDITOR OF THE DENTAL REVIEW:

Dear Sir—In reading the remarks by different speakers before a recent meeting of the Chicago Dental Society one can not fail to observe that uniform methods of practice do not obtain in that enlightened body. The dental pulp is still the cause of much discussion—fruitless in some respects—needless from some standpoints. When the pulp must die at the hands of the operator he must poi-

son it or stun it so as to remove it. It will not do to leave a portion of it alive in the root—even in the end of the root—because later it will give trouble. All dental history goes to prove this. Too many cases have occurred in the practice of those who have been at it long enough in one community to approve of such practice. The method of tearing out the pulp under local anesthesia is still under trial, as it has not been practiced long enough to prove that it is superior to the poison method. The poison method is seventy years old, and the freezing, anesthetizing and electrical methods, all combined, are not twenty years old even now. It was in 1884 that Kohler demonstrated cocain to be a local anesthetic. Brouck in 1859 proved that a pulp could be stunned with electricity, but few or none used it until 1889, and now before the leading dental society of Chicago the members are discussing the A, B, C of pulp removal! One of the members said, and truly, after the pulp is removed the filling of the root is the *sine qua non*. It was proposed a few years ago to “knock out” the pulps of teeth with a sharp stick soaked in carbolic acid. It seems to me from reading, from experience, and from observation, that fewer teeth give after trouble to the patient when the pulp has been poisoned with arsenic than all other methods of pulp treatment combined. This will include mummification. The theory of mummification is based upon the destruction of a pulp with a poison, and then using a preservative to retain it *in situ* at the apex. The probable success of mummification of a pulp is dependent on *encystment* of the apex.

Any dental anatomist will tell you that the roots of teeth—even single rooted teeth—are not perfect cylinders externally and internally, and the proposition to remove all pulps by the local anesthesia route is untenable from the anatomic standpoint.

It seems to me that there is a wise conservatism in using all good methods for pulp removal, including the digestive method, or the formalin method of Dr. John I. Hart, which is the latest of the new methods of pulp removal.

There are too many constricted roots, too many pulp nodules in teeth for all pulps to be removed with local anesthetics. One of the speakers said that it was as difficult to remove a dead pulp from twisted and crooked roots as it was the living pulp by local anesthesia. Shades of Callahan! Why not use sulphuric acid? There is no pain after the pulp is dead.

I am much interested in these discussions 1,000 miles from my old stamping ground, and desire to say that much is needed in the *technique* of pulp removal from the teachers in our colleges before uniformity of practice obtains.

Yours truly,

A. W. HARLAN.

1122 Broadway, New York.

NEW YORK LETTER.

The February meeting of the Second District Dental Society was held on the evening of February 13, in the large lecture room of the Kings County Medical Society Library building, 1313 Bedford avenue, Brooklyn.

Under the enterprising management of its president, Dr. Gould, ably seconded by an efficient executive committee, this society has had several notable meetings this winter. This one in February was perhaps the most interesting as may be judged from this statement taken from the programme: "The question of the evening will relate to the propriety or impropriety of extracting teeth in crowded arches for the purpose of aligning the others."

Dr. Herbert A. Pullen, of Buffalo, read a paper entitled "Conservative Teachings of Occlusion."

Dr. S. H. Guilford, of Philadelphia, followed with a paper entitled "When is Radical Treatment Justifiable in Orthodontia?"

Both papers were profusely illustrated with most excellent stereopticon views of various stages of the work.

Dr. R. Ottolengui, in his discussion, had the privilege of showing on the screen many illustrations sent by gentlemen who could not be present. The first essayist, Dr. Pullen, was plainly opposed to extraction. He advised treatment at an early period in life. His models and illustrations showed well his results, but he did not describe his method of attaining these results nor show appliances. He believes in preserving the full complement of teeth.

Dr. Guilford claimed that extraction was in many cases justifiable; aimed to prove his case by the writings of members of the "new school." He quoted at length from Dr. Angle's book in justification of extraction in some cases. He illustrated his ideas on the screen, showing several pictures of cases where extraction had oc-

curred. He claimed for these cases that patient and parents were pleased and that while he would admit that in many of them the occlusion was not as good as might have been desired, yet the results were fairly satisfactory. It was noteworthy that nearly all the illustrations showed a marked difference in alignment where extraction had occurred on but one side of the mouth, and in such cases the median line was always deflected toward the side where extraction had taken place.

He qualified his remarks along the line of justifiable extraction by saying it was only to be followed in rare cases.

Dr. Rulof Stanley, of New York, presented some slides illustrative of work in his own mouth, where space was obtained in the movement of irregular teeth at about thirty-two years of age, and the space retained by artificial means, thus keeping the corrected teeth in position.

Drs. Roberts, Watson, Barnes, Lowry and Ketcham each took part in the discussion.

Dr. Ottolengui in presenting his illustrations prefaced his remarks by reading a letter from Dr. Angle which quite refuted Dr. Guilford's quotations, showing that Dr. Angle had experienced quite a change of heart since writing his book. Among other things he said that the full complement of teeth is absolutely essential, not only to normal occlusion and proper function of the teeth, but to correct development of nasal tract and of voice. Referring to New York City he said there was no other place in the United States—not even Philadelphia—where is believed and practiced teaching so far behind the times.

Dr. Ottolengui then presented some illustrations from Dr. Angle, in proof of his opposition to extraction.

Dr. Rogers, of Fall River, Mass., condemned promiscuous extraction in unmeasured terms.

Dr. V. H. Jackson, of New York, took up the cudgels in favor of more than occasional extraction, following much the same lines as had Dr. Guilford. Nevertheless he does not advise it except when in his opinion it is *absolutely* necessary, but he believes there are some cases in which extraction *must* be performed. Not, however, without careful consideration of the case.

Dr. Young, of Detroit, drew the analogy between contraction

of scar tissue and its equivalent in bony structure, to show that if a complete occlusion is reached in orthodontia there will be no scar tissue. He spoke of the effect of mal-occlusion on the nasal passages and inveighed emphatically against extraction.

Dr. Dailey, of New York, illustrated his prognosis of cases of mal-occlusion which consists of securing two impression of the mouth. One is articulated in the usual way, or rather his usual way, which is very nice, insuring uniformity of models; the other model is used to carve fangs of a supposed shape. These plaster teeth are then assembled to represent approximately what the completed case should represent.

At the meeting of the First District Dental Society February 14th, the feature of the evening was a paper on Oral Surgery, by James E. Power, Providence, R. I. Dr. Power took the position that a dentist had as much right to operate upon diseases of the mouth as a surgeon; that it mattered little whether the operation was done through the mouth or face so that the cure was quickly established. Many of his views were directly opposed to those of more conservative surgeons. He demonstrated by lantern slides the results of his work. In some the scars and depressions caused by external operations were deep and unsightly. He had much to say on "anti-sepsis," and claimed much for alcohol as a germicide. He took the position that the M. D. degree was not a necessity. A dentist had the same right to perform oral surgery as he had dentistry, as his instruction qualified him for such work. The paper was particularly suited to the beginner in surgery.

The subject was discussed by Dr. Stelwaggan, of Philadelphia, Dr. G. Lenox Curtis, Dr. Robert T. Morris, Dr. Hart and Dr. Sinclair Tousley, of New York. These men generally agreed upon the importance of a general medical education. Dr. Stelwaggan particularly spoke of the uncertainty of alcohol as a germicide, claiming that it was impossible to sterilize the hands so that cultures could not be made from them. He thought if their hands were cleansed with green soap and then washed in bi-chloride solution and then rinsed in sterile water they were clean enough to insure safety. Also that there was little danger of infection, if the instruments were clean.

The best method of insuring the safety of the instruments, Dr. Morris said, after boiling them, was to put them into a solution of pure carbolic acid and leave them in for a few minutes, then rinse in sterile water.

Dr. Curtis claimed that if the instruments and dressing were sterile that there was practically no danger of sepsis, that the jaws and face were so richly supplied with blood vessels that the chances of sepsis and the wounds not healing were greatly diminished; that secretions indigenous to the parts operated upon do not infect and that his methods of surgery were exceedingly conservative and restorative. He did not see the necessity for opening through the face when no opening had been caused by the disease. He criticized the wisdom of removing abscessed teeth merely because they were abscessed. In the case where the doctor had removed several of the deciduous teeth along with the alveolar process he believed that there was no necessity for removing any of these teeth, as it not only deprived the child of her teeth but retarded the development of the jaw. He pointed out how all this could be done from within the mouth and the lost tissue reproduced and cited cases to substantiate his argument. He, however, encouraged Dr. Powers in his work, but said, while his methods were not based upon conservative lines, we must allow that the cases got well.

Dr. Morris told how the germ of erysipelas might be destroyed within a few minutes. He said to saturate the part affected with pure carbolic acid carrying it beyond the lines of infection to insure contact with all the germs. As soon as the part becomes blanched apply alcohol to neutralize the carbolic acid and restore the color to the skin. Dr. Rhein said in speaking of arsenical necrosis he believed in leaving it alone and allowing nature to take its course. Others did not agree with him. They thought the undertaker would be called upon to dispose of the case.

Dr. Curtis suggested the importance of removing the necrosed area and saturating the part with tincture of iodine, which he claimed neutralized the arsenic and acted as a germicide and counter irritant. Several spoke against the use of arsenic for devitalizing pulps, because of the extension of inflammation which sometimes occurred. Others, however, contested for its conservative use. Several advocated the use of cocaine for removing pulps, but Dr. Rhein took exceptions

to this method and expressed a belief that it was practically impossible to get results.

The silver anniversary of the Central Dental Association of Northern New Jersey occurred on Monday evening, February 20th, at Newark, N. J. An elaborate banquet was spread and over 175 sat around the festive board, when Dr. C. S. Stockton, the retiring president, called for order and the speech making began. In his opening remarks he warmly complimented Dr. Charles A. Meeker for his arduous labors of the past twenty-five years, the result of which was shown in this evening's meeting, claiming that more credit was due Dr. Meeker than any one else for this result.

To those who have known this society from its infancy this fact is very apparent. Dr. Stockton spoke of the C. D. A. as being a "feeder" for the State society. Said he had aimed to make the society a "young men's society." At the conclusion of his remarks the entire company rose to their feet and sang with emphasis, "For He's a Jolly Good Fellow."

Dr. Safford Goodwin Perry, of New York, was then introduced to respond to the toast "Forgiveness and Fraternity the Watchword of Peace and Happiness." Charity, he said, was the main essential about which his topic centered. In discussing it he stated that he might go as far back as 500 B. C. and refer to the tenets of Confucius, charity, honesty and sincerity. He might also refer to Buddhism or Shintoism, the religion, or hero worship of Japan, both of which carried charity as one of their main characteristics. Christianity, the greatest of all religions, as exemplified in the words of the Master, also furnished ample evidence of charity, he said. He urged a spirit of brotherhood, a natural result of charity, and said it was a great privilege to love one's friends and a great achievement to forgive one's enemies.

A delightful violin solo by William Globe with accompanist paved the way for more speechmaking.

Dr. S. C. Watkins, of Montclair, described "The Summer Recreations of a Dentist in the Adirondacks," and incidentally had a little fun at the expense of Dr. Stockton, who accompanied him on one of his trips to the popular resort. The pleasures and hardships of

the tourist and sportsman were set forth in a humorous way. The story of the experience of the vacationist in wood and stream showed well that the speaker had been through it all and that he spoke with the fervor of a true sportsman. His address was roundly applauded.

Dr. R. M. Sanger, of East Orange, told of a recent trip to Porto Rico under the toast, "Delights of the Tropics," in which he gave a fine description of the sunset and sunrise seen from the steamer's deck as it ploughed the bounding deep, and of the beauties of nature, including the verdure and high mountains found on the island.

"The Glories of the State and Society" gave Dr. W. G. Chase, of Princeton, president of the State society, an opportunity to show by a historical sketch of New Jersey its high standing among the States during our national existence. In times of peril, from the Revolution to the Civil War, and then again the recent war with Spain, it had furnished its quota of men. It might also feel proud of a State dental organization second to none in the country, which more than once had placed itself squarely on record in the interest of the practitioners of the State.

Dr. Frank G. Gregory, a popular dentist of Newark, and a former president of the C. D. A. had the pleasant duty of responding to the toast of "The Ladies," and he did it in a happy vein. He paid homage to the true woman's influence, through love and sacrifice, over a man's life, and expressed many fitting sentiments.

Dr. E. W. Harlan, of Jersey City, spoke on the "Young Man's Influence in the C. D. A." He urged a true co-operation between the younger and older members. Careful attention to and respect for the opinions of the older members on matters of technical interest to dentists was always beneficial to the young practitioner.

A feature was the address of Dr. William E. Truex, of Freehold, chairman of the State Dental Board, who told of the work of that body and its plans for the future. At the outset he said that the C. D. A. was the working body of the New Jersey State Dental Society, or the hive in which the busy Jersey bee works. After referring to the Asheville resolution he went on to say that under its provisions, Indiana, Tennessee, Michigan and Utah have an interchange of license with New Jersey. Vermont, California and Nevada have the agreement under advisement, but at present can not, on account of existing laws. Washington, D. C., has the resolution incorporated

in its laws, he said. Dr. Tuex gave credit to Dr. Stockton for introducing the Asheville resolution.

Dr. Truex said that during the year the State board had upheld the dignity of the State law by a conviction under its provisions in the circuit court, sustained in turn by the supreme court and the court of errors, and appeals. The practitioner, the defendant in the case, fearing an unfavorable decision, the speaker declared, had introduced in the legislature last winter a bill admitting to regular practice any student who had served a term of years as assistant to a regular practitioner. It was defeated in the assembly by the strenuous efforts of the State board, and then only by three votes. Dr. Truex added:

“For a number of months previous to the rendering of the decision by the court of errors and appeals matters were at a standstill as far as prosecuting illegal practitioners was concerned, but since that time your board has been instrumental in enforcing the law in a number of cases.”

Dr. Truex spoke of the interchange of license between New Jersey and New York. It was no easy thing to accomplish, he said, Licentiates of New Jersey were enabled now to go to New York and may secure a license to practice there without examination on the payment of a prescribed fee, provided the preliminary education of the candidate is equal to that required by the New York statute. Licentiates of the New York board are to be granted licenses to practice in New Jersey under the same conditions. New York, he said, has also incorporated in its laws the six-year exemption clause, which provides that any dental practitioner in good and regular standing may receive a license upon submitting satisfactory proof that he has been practicing for six continuous years.

Thus closed a memorable evening in the history of this energetic society. May it live to see its golden anniversary with many added honors.

At a business meeting held just before the banquet the election of officers took place with this result: President, T. Starr Dunning, of Paterson, who was vice-president last year and succeeded according to custom; vice-president, Dr. Joseph S. Vinson, Newark; secretary, Dr. H. P. Marshall, Newark; treasurer, Dr. Charles A. Meeker, Newark; executive committee, Dr. W. Moore Gould, Newark; Dr. C. F.

Alfred Hane, Jersey City; Dr. C. E. C. Smith, Newark; Dr. Frank G. Gregory, Newark; Dr. Vernon D. Rood, Morristown.

On Tuesday evening, February 21st, at the New York Academy of Medicine, the New York Odontological Society, Dr. John I. Hart presiding, listened to the reading by Dr. Joseph Head, of Philadelphia, of quite a scientific treatise entitled "Tests on the Strength, Thickness, Solubility and Best Methods of Working the Cement used Around Inlays."

It was highly interesting, clearing up many mooted points. Evidently Dr. Head has given the subject considerable study and his deductions are valuable and indisputable by the majority.

Among some of the qualities named that cements for inlay work should possess Dr. Head said, one that would give a minimum thickness at the enamel line.

His tests were confined to, in his opinion, the two best products for our purposes, namely, Harvard and Ames cements.

Three grades of Harvard were used, namely, the regular article, Harvard special and Harvard pulverized. Of Ames, he used the regular and inlay.

Pressure tests in setting of cements were used of 8, 25, 50 and 100 pounds. A pull was used, applied to the edges of specimens (so as to overcome atmospheric resistance) and to the center and base of plugs in ivory, a pushing out from the bottom of cavity to determine if possible the greatest resistance. The thickness (or thinness) of film in some instances measured $1/10000$ of an inch. The fineness of cement powder he deduces as a much more important factor than resistance to pressure (strength).

Harvard coarse set under eight pounds pressure gave a line $24/10000$ inch in thickness, Ames under same pressure $1/1000$. Pressure should be maintained until setting is complete, which is about fifteen minutes. Adhesion tests of smooth or glazed surfaces were very unsatisfactory. All surfaces should be etched, ground or deeply cut. The mere expansion and contraction caused materials with smooth surfaces to separate.

A peculiar form of spring scales was used, fitted with needle and carbon film, so arranged as to indicate the exact force attained in dislodging the various specimens.

Average pressure required was twenty ounces. Slight advantage to pulverized cements. Figures of some dislodgement experiments are thus: Cavities with perfectly smooth walls, pulverized cement required less than eight ounces pressure; same character of cavity, etched surfaces, three pounds three ounces; same character of cavity, undercut surfaces, eleven pounds six ounces; same character of cavity, undercut with mass of cement underneath (cavity enlarged for that purpose), twenty-five pounds ten ounces. There is about three times the thickness between the coarse and fine (pulverized) cement line.

Dr. Head summarized his experiments as follows: General average under eight pounds pressure for one minute:

Harvard coarse13 lbs. 2 ozs.

Harvard pulverized13 lbs. 4 ozs.

Ames 8 lbs.

General average11 lbs. 8 ozs.

General average under eight pounds pressure until set:

Harvard coarse11 lbs. 10 ozs.

Harvard pulverized17 lbs. 7 ozs.

Ames 9 lbs. 9 ozs.

Average12 lbs. 14 ozs.

Dr. Gillett, of New York, opened the discussion. He said we depend too much on clinical work and observations and too little on scientific research. "These scientific experiments show most conclusively. It is folly to criticise such work without experiment." Dr. Gillett in discussing means to bring pressure on inlays cemented in teeth, said he uses floss silk as medium. Even for those labial fillings where floss silk would not be indicated he bends a thin piece of spring steel so that it will rest on the inlay and near incisive edge of tooth then binds it tightly to that part of the tooth where silk can be wrapped about. He objects to the wedge for retaining proximal fillings because of the difficulty of placing it properly. Gilling twine is sometimes used because of its extreme contractile power when wetted.

Dr. S. G. Perry said that it was not possible to discuss the statements of scientific facts. The paper would require analysis and digesting before we could differ with the essayist very much, if at all. Dr. Perry dwelt at some length upon the refraction of light from cement and how the color of cement influences color of porce-

lain. He has often improved the color of poor inlay by changing color of cement.

To prevent the pigmenting of cement he uses a wooden spatula. (Orange wood.) The pulverizing of oxide of zinc is an important thing and can be done by anyone with a pestle and mortar; grinding down coarse powder or one that may not seem fine enough.

One real trouble with most of us in the work we would like to do is that we have not the time, strength or encouragement.

A few remarks picked up from what Dr. Van Vleck, of Hudson, had to say was that he never trusts to the etching process but cuts his inlays wherever there is opportunity for it. He depends upon wedges for pressure while cement is hardening. "If they (the inlays, etc.) fit they can't be wedged out."

Dr. W. D. Tracy's method of exerting pressure is by wedging mostly; he has little trouble from etched inlays.

Dr. William Jarvie, of Brooklyn, said he could not help thinking what a lucky set of fellows we are; we derive most of the benefit from such work as Dr. Head's and others. He believes that etching is necessary to assist in retention, and expressed surprise to learn of a properly applied pressure that would unseat a filling. Two great points in cement question are the consistency and greatest plasticity.

Dr. Dunning suggested as a test to determine color of cement before setting porcelains to place a drop of water and then some powder that you intend using, in the cavity then try in porcelain.

Dr. LeRoy uses thin matrix steel wide enough to overlap edges of cavity and then wedges filling, or pressure is exerted more uniformly than by the ordinary method by using very thin, pliable copper strip material or celluloid (kodak film), which will more than cover the porcelain restoration binding either of these materials tightly to the tooth with several windings of floss silk. If one wishes to exert unusual pressure a wooden wedge can be forced under the silk.

Dr. Head in closing said he had heard a great many things theoretically but there were so many fallacies that he determined to work some of them out conclusively. He spoke of the physical property that cements have of expanding before setting, saying that possibly a great deal more pressure is exerted than we could apply (to a tooth) to overcome. Considerable spatulation is not necessary

after a proper mix. Color of cement should be a trifle lighter than porcelain if possible. Ames' pigments can be used to considerable advantage for coloring cements.

A regular meeting of the New York Institute of Stomatology was held Tuesday evening, February 7th, at the "Chelsea," on West Twenty-third.

Dr. F. J. McLaren demonstrated his method of repairing a gold plate when teeth are attached with rubber.

Dr. Samuel A. Hopkins, of Boston, Mass., was the essayist of the evening. He read a paper entitled, "Some Recent Observations in Metabolism and their Importance in Dentistry," defining the process as the chemical changes which take place in the body in the process of nutrition. Tired cells will not take up nutrition needed. He expressed himself as fully of the opinion that anyone following rigid dieting will sooner or later lead to chronic indigestion. A smaller amount of food and greater mastication is the secret of good health. Mastication is almost a lost art. He said there was great danger in changing quickly from mixed diet to special diet. The same held good for any rapid change for any process of life.

Many of Dr. Hopkins' arguments were based on Dr. Chittenden's (of Yale University) experiments of diet on human beings, saying that that gentleman had proved that the human machine can get on with about one-half the usual amount of proteid foods. His experiments were upon different groups of workers; athletes, professors, physical instructors and men from the army corps; all did well. They reluctantly returned to their old system of dieting.

A weakened or tired body is made evident by fear or uncertainty. The cutting down of nitrogenous foods is an essential to capacity for fuller work. Carbo-hydrates are energy producers.

His contention is that no departure from a general and varied diet is necessary, only that it should be carefully chosen and quantity reduced to enough to satisfy the appetite. Thorough mastication invariably leads to a desire for simpler foods. Salivary digestion is a very important factor. Unmasticated food is the cause of ulceration of the stomach and cancer. The medical profession has accepted this as a fact. Bacteria do not pass through healthy epithelial tissue. It is true that bacteria are found in the mouth before and after a meal but healthy gastric secretions destroy these.

This is but a meagre synopsis of a very able and learned paper. So absorbed was the writer by the almost continuous exposition of interesting matter that many excellent features were not recorded and I decline, as usual, to quote from memory for fear of distorting fundamental facts. All should read the paper when it is published in full.

The discussion which followed was equally interesting for a very able man, Dr. John Mendell, professor of chemistry in Bellevue Medical College, was called upon. He compared Dr. Wagner on "Simple Life," and Dr. Chittenden on "Simple Food"; both, he thought, were somewhat dangerous. What would be the resisting power of an organism for a year on nitrogenous foods? He does not believe they could stand any great strain. The general theory is and his belief is that the body must have an abundance of food. A low nitrogenous diet is dangerous to advocate. Of course this is contrary to Dr. Chittenden's deductions. Individually he required about twenty grammes a day and still believes he is not overfed, and in truth he did not look so, for his physique and mentality indicated one of strength and alertness; certainly his actions and speech bore testimony. His claim is that excessive nitrogenous diet will lead to disturbed mental and physical conditions. As to putrefaction in intestines, we can not get rid of it; it is a normal condition.

Dr. Mendell was thinking whether it was not possible to overmasticate. The salivary glands do more work than the liver, and does it not dilute the hydrochloric acid? He brought up the question of psychic influence by experiments on a dog. The animal was given food which was swallowed in the usual manner but it was allowed to pass out of the esophagus before it reached the stomach. The psychic moment is a very vital question in relation to the teeth.

The question was asked: Are enzymes produced in the mouth besides micro-organisms? Enzymes are unorganized substances which will produce changes.

Dr. Whitlock spoke very eulogistically of Dr. Chittenden's method, paying tribute to his system of diet, which has given him power to do more work than he was ever able before to accomplish.

Dr. Fossum spoke of some experiments of food made on himself.

Dr. Wheeler said he had two children; one will not eat meat, the other eats anything. The latter can stand most anything, while

the former is anemic. Nature adapts herself to the needs of individuals through environment, but is not able to do so rapidly.

Dr. Mendell gave as a good remedy for bilious headache (which had been referred to several times by speakers) small doses of calomel as an intestinal disinfectant followed by resorcin or something similar. The writer recommends seidlitz powders the morning following.

Dr. E. A. Bogue was present at this meeting having quite fully recovered from his operation of last year. He cited the fact that Greenlanders subsist on fat and whale blubber and thrive well. Those who go there from here learn to eat the same food and other things which would under their normal conditions be repugnant.

Dr. Hopkins in closing made further remarks sustaining his contentions and the labors of Dr. Chittenden.

THE BOROUGHs.

OBITUARY.

Dr. Ben Abe McGee departed this life at his residence in Denver, Colo., January 15, 1905, of heart failure.

He was born at Bloomington, Ind., July 26, 1851. After completing the course in the public schools, he graduated from the University of Indiana. He entered the practice of dentistry in his home town in 1875. He attended one course of lectures in the Ohio College of Dental Surgery, Cincinnati, Ohio, after which he located at Rockport. Two years later he returned to Bloomington, where he engaged in the practice of his profession until 1894. In the fall of 1886 he returned to the Ohio College of Dental Surgery, where he completed the course, graduating in 1887. He removed to Colorado in 1894, locating in Salida for a short time, and then in Denver where he remained in active practice to the day of his death. He was married to Miss Alice Norman, in Louisville, Kentucky, in 1872. He is survived by his wife, one daughter and one son, Dr. Rea P. McGee, who was associated with him in the practice of dentistry. Three months prior to his decease he was subjected to a deep bereavement in the death of his eldest son, Norman McGee, from which he never fully recovered. He served the State of Colorado six years as a member of the Board of Dental Examiners. He was president of the Colorado State Dental Association at the time of his death; ex-member of the Indiana State Dental Association; honorary member of the Kentucky State Dental Association; ex-member of the National Dental Association; an active member of the Denver Dental Association. His early life to that of mature manhood was passed in the great educational center of Indiana, which seemed to have a decided influence upon his life, so much so, that he became an enthusiast upon the subject of education. A cherished belief was that every boy and girl should receive a liberal education for their protection, and for the good of society. The dental profession has lost a valued member, one who had no secrets in dentistry, and who was a kind and genial friend. Although we bow with humble reverence to God's all wise decree and dispensation, we can not but feel deeply grieved by the sudden taking away in the bloom of usefulness of one who was an honor to his

State and profession. As long as we love our profession, as long as we cherish devotion and loyalty to it, so long will the memory of our brother abide in the heart of the members of our association. Though dead, the fame of Dr. Ben A. McGee is secure. To wife, daughter and son who bear the heavy cross, and the full measure of sorrow, we offer our deepest sympathy, our kindest solace.

FERNANDO H. SUTHERLAND,
EUGENE R. WARNER,
WILLIAM A. RAYMOND,

Committee Colorado State Dental Association.

MEMORANDA.

MICHIGAN STATE BOARD OF DENTAL EXAMINERS.

The Michigan State Board of Dental Examiners will hold their next examination at Ann Arbor, Mich., May 16, 1905, at 9 o'clock a. m.

CHARLES H. OAKMAN, *Secretary.*

PENNSYLVANIA STATE BOARD OF DENTAL EXAMINERS.

The Board of Dental Examiners of Pennsylvania will conduct examinations simultaneously in Philadelphia and Pittsburg June 6-9, 1905. For papers or information applicants for examination must address Dr. Nathan C. Schaeffer, secretary Dental Council, Harrisburg, Pa.

CALIFORNIA STATE DENTAL ASSOCIATION.

At a meeting of the Board of Trustees of the California State Dental Association held in San Francisco February 10th, it was unanimously decided to adjourn the State meeting for 1905, in favor of the Lewis and Clark Dental Congress to be held in Portland July 17-18-19-20.

JOSEPH LORAN PEASE, *Corresponding Secretary.*

Central Bank Building, Oakland, Cal.

KANSAS STATE DENTAL ASSOCIATION.

The thirty-fourth annual session of the Kansas State Dental Association will be held in Topeka, May 18, 19 and 20, 1905. Special attention is being given to the clinical program. A cordial invitation is extended to the profession. Headquarters at Copeland Hotel.

F. O. HETRICK, *Secretary,*
Ottawa, Kan.

NEBRASKA STATE DENTAL SOCIETY.

The twenty-ninth annual meeting of the Nebraska State Dental Society will be held at the Lincoln Dental College, Lincoln, May 16, 17 and 18, 1905. The Clinic Committee promise us the best meeting in the history of the Society. All reputable members of the profession are invited to be present.

Fraternally yours,

M. E. VANCE, *Secretary.*

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

The annual meeting of the N. A. D. F. will be held at Buffalo, commencing at 2 p. m. on Thursday, July 27, 1905. The Executive Committee will meet at 10 a. m. the same day. Special business to come before the N. A. D. F. is the consideration of the proposed revision of the constitution and by-laws.

H. B. TILESTON, *Chairman Ex. Committee.*
JOHN I. HART, *Secy. Ex. Committee.*

SOUTH DAKOTA STATE BOARD OF DENTAL EXAMINERS.

The next meeting of the South Dakota State Board of Dental Examiners will be held at Mitchell, S. D., July 11, beginning at 1:30 p. m. All candidates will be required to do practical work in both operative and prosthetic dentistry and should bring all instruments and materials necessary to do the same. Vulcanizer, lathe, and swaging appliances will be furnished by the board. Application, together with fee of \$10.00 must positively be in the hands of the secretary before July 7th.

Yours sincerely,

G. W. COLLINS.

LEWIS AND CLARK DENTAL CONGRESS.

The meeting of the Lewis and Clark Dental Congress to be held in Portland, Oregon, July 17-18-19-20, 1905, promises to be the largest ever held on the Pacific coast.

The Committee on Clinics asks for voluntary clinics or table demonstrations from members of the profession and suggests that notice of the same be sent the committee as soon as possible.

In order that the program be complete, names of clinicians and clinics must reach the chairman not later than June 15th.

G. H. NOTTAGE, Chmn. Com. on Clinics.

Oregonian Bldg., Portland, Oregon.

F. I. SHAW, Seattle, Wash.

B. S. SCOTT, Tacoma, Wash.

A. STARK OLIVER, Spokane, Wash.

C. E. POST, San Francisco, Cal.

CLAUD W. GATES, Salt Lake City, Utah.

J. H. HOLMES, New Westminster, B. C.

A. W. CATE, Boise, Idaho.

W. H. BARTH, Great Falls, Montana.

JUSTICE TO DR. GEORGE H. WATSON.

On the occasion of the suicide of Dr. A. H. Sylvester, of Berlin, Germany, comments were made in the public press regarding the withdrawal of Dr. George H. Watson from Dr. Sylvester's practice, which was calculated to work an injustice on Dr. Watson. Accordingly the following statement which speaks for itself was published in the *German Times*, of Berlin:

A PROTEST BY AMERICAN DENTISTS IN BERLIN.

We, the undersigned American dentists in Berlin, respectfully present the following urgent protest against a notice in the last number of the *German Times* (January 16th) in which statements are made which are well calculated to injure the name of a member of the American Colony who is most highly esteemed not only as a skilful practitioner of dentistry but as a man of unwavering integrity of character. Having examined into the business relations of this gentleman with the deceased Dr. Sylvester we are absolutely convinced that he not only most conscientiously and scrupulously lived up to the terms of the contract which existed between him and the deceased, but still more that he evinced a charity in his dealings far beyond that which could have been legally exacted and which has evoked our undivided admiration.

We herewith express our unreserved confidence in the gentleman

in question and our strong disapproval of all attempts to make him in any way responsible for a deplorable event over which he had no control.

Berlin, January 19, 1905.

W. D. MILLER.
CHARLES H. ABBOT.
FERD. FOERSTER.
E. D. BARROWS.

GEO. O. WEBSTER.
GEORGE MARTIN.
J. H. RAMSEY.

E. LAWLEY-YORK.
GEORGE A. KENNEDY.
LEE A. WATLING.

LR. L. P. HASKELL.

At the February meeting of the Odontological Society of Chicago Dr. L. P. Haskell was the guest of honor. Other guests present were Drs. Edmund Noyes, I. A. Freeman and C. P. Pruyn. The early part of the evening was delightfully spent in toasts and responses from the guests, after which the regular paper of the society was read and discussed. Dr. Haskell is one of the oldest and one of the most active practitioners in Chicago, and well merits the distinctions that are continually conferred upon him.

CAN NOT EXAMINE CORPORATIONS TO PRACTICE DENTISTRY IN NEW JERSEY.

We copy the following statement from the Fifteenth Annual Report of the New Jersey Board, which relates to a question that is worthy the consideration of the entire profession:

"It is with alarm the ethical dentist views the rampant commercialism that is yearly becoming more prevalent and changing the honest practice of dentistry to a strictly commercial phase.

"Our present law allows any person, whether licensed or not, to rent and equip, in the larger centers of population, any number of offices devoted to the practice of general dentistry.

"The method of procedure is to incorporate under the general law a high sounding name, title or association, create dummy executive officers, flood the papers with advertisements with promises of impossible accomplishments and prices, hire young men who are licensed by the State Board, and commence in a wholesale way on the general public.

"In a short time after the licensed men are displaced by students, and even office boys, who are allowed to do service for patients who may enter, and the indiscriminate administration of nitrous oxide, cocaine and other dangerous drugs are used with slight knowledge of their physiological effects. And it is mostly poor or uneducated classes, who are unable to discriminate between ethical and honest dentists and the flowery and cunningly worded advertisement of the commercial practitioner, that suffers injuries that are never heard of except in limited circles."

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

The following letter has been sent to the deans of various dental colleges throughout the country, and we are glad to give it space for the consideration of our readers:

MADISON, WIS., February 14, 1905.

Dear Doctor: In consideration of the conflicting views as to dental educational standards which have existed for some time, the National Association of Dental Examiners, at its annual meeting, held at St. Louis, August, 1904, deemed it expedient and necessary for the upholding of such schools as sought to maintain the standards already published to the world as the minimum that should obtain, to declare what educational standards should be required by the State Boards of Examiners as a criterion of reputability of the schools seeking recognition of their output.

This *ad interim* committee, which is also the Committee on Colleges, was instructed to inform all schools of the action taken, and directed to prepare a recommended list of colleges on the basis of the standards established at that meeting.

Feeling fully the gravity of the duty imposed, this committee has expended much effort in striving to arrive at a basis of fairness to all interests concerned in carrying out its general instructions. The chief requirement established at St. Louis was that of "graduation from an accredited high school or its full equivalent" for admission to the classes of 1905-06.

In several schools and university departments this requirement is already in actual operation, and our committee finds a considerable number of other schools desiring to maintain it. All these, of course, will be placed on the recommended list. There are, however, other schools whose deans assert that to enforce at once this advance requirement would work a serious financial injury to their institutions.

The question of what should constitute a proper length of course for graduation from dental college has always been left by the examiners to the colleges themselves, except that, after a school has announced to the public a certain course as necessary to properly fit a student for graduation, if it for private or financial reasons, deliberately lowers its requirements in any particular the question of good faith and reputability of that school becomes at once a matter for adjudication by every board in the country.

We, therefore, acting upon authority of, and, *ad interim*, representing the National Association of Dental Examiners, which is the advisory body of the various State Boards in their official acts, respectfully request that you authorize the Committee on Colleges to place your school on the recommended list of colleges by the acceptance of the following educational requirements for students, viz.:

For matriculation or registration, "graduation from an accredited high school or its full equivalent, all examination of credentials and equivalents to be placed in the hands of an acceptable appointee of the State Superintendent of Public Instruction where not otherwise provided for by law," said requirements to be inaugurated not later than the beginning of the school year of 1906-07, and a college course for graduation optional with you of either four years of seven months each or three years of nine months each, this course requirement to be inaugurated the present year, 1905.

It is to be expected that schools maintaining these standards will be protected in so doing by the several boards composing the National Association of Dental Examiners.

It is the intention of this committee to prepare and publish the recommended list of colleges not later than April 1st next, in order to give all schools the earliest opportunity to announce these standards to the public. Therefore, information as to your decision is desired as early as possible.

Very respectfully yours,

CHARLES C. CHITTENDEN,
Chairman Committee on Colleges.

RECENT PATENTS OF INTEREST TO DENTISTS.

777,821. Dental separator. Robert Walker, New York, N. Y.

778,567. Grinder for tooth crowns. Marcus A. Coykendall, Grand Rapids, Mich.

778,650. Dental tool. Emil Forquignon, New York, N. Y.

778,955. Dental tool holder. Richard M. Dunlevy, Bellevue, Pa.

778,981. Dental mouth mirror. Alfred Littauer, Asbury Park, N. J.

779,496. Artificial tooth. Robert E. Payne, New York, N. Y.

Copies of above patents may be obtained for ten cents each by addressing John A. Saul, solicitor of patents, Fendall building, Washington, D. C.

THE DENTAL REVIEW.

VOL. XIX.

CHICAGO, APRIL 15, 1905.

No. 4

PARTIAL REPORT OF COMMITTEE APPOINTED BY THE CHICAGO DENTAL SOCIETY TO INVESTIGATE EROSION OF TEETH.

DRS. J. E. HINKINS, GEORGE W. COOK AND J. P. BUCKLEY.

To the Members of the Chicago Dental Society: Your committee after considerable deliberation deemed it absolutely necessary to make a careful review of the literature in order to familiarize ourselves with the various theories that have been advanced upon this subject.

The etiology of this disease has been a stumbling block to nearly all the authors. Tomes believes it to be of strictly mechanical origin, Hunter looks upon it as a disease inherent in the tooth and not dependent on circumstances in after life. Fox thinks it due to the saliva and friction of the lips. Bell attributes it to mechanical agencies, upon certain from some cause predisposed, circular depositions of enamel; Garretson considers it a disease of predisposition, the result of impressions at the period of enamel formation. Harris and Taft ascribe it to acidulated buccal mucus. Nuhn accounts for erosion upon the cutting edge of the front teeth by the secretion of an acidulated mucus, secreted by a gland discovered in the tip of the tongue. Weal says: "The fact that such defects never occur upon the lingual surfaces of the neck indicates that their cause is to be sought for upon the facial side. Sometimes the mucous membrane of cheeks and lips is raised into a fold opposite the dental arches. In many cases there is a tendinous expansion upon the facial surfaces of the gums of the lower jaw, which gradually becomes narrower, and terminates with a ridge of connective tissue, which is attached to the neck of the bicuspid or molar tooth. It

may be well to consider in future cases whether any relation exists between the defects upon the neck of the tooth and these folds or ridges."

Another author suggests that the disease may consist of an analogous process to that of resorption of the roots of the deciduous teeth, by a fluid secreted at the margins of the gums, in combination with a predisposition in the teeth concerned.—*Dental Cosmos*, 1873, vol. 15, p. 466.

Charles Koch, in writing on erosion differentiates it from abrasion in that the localities of its occurrences almost invariably preclude even a possibility of mechanical exciting causes. He differentiates it from caries in that it is almost exclusively confined to the labial and buccal surfaces, very rarely attacking the cutting edges of the incisors; that it is not symmetrical in its occurrence; and the most marked difference is that, while a carious location always contains more substance, there is never anything of the kind perceptible either by touch or vision, in localities affected by erosion. Koch states that the fact that no similar appearance to erosion can be artificially produced by the action of chemical agents with the addition of such mechanical force as the teeth would be subjected to in the mouth, would lead us to doubt the entire correctness of either the purely chemical or mechanical theories as to its origin, and we are hence much more inclined to the opinion that some truly pathological condition either congenital or acquired, is a predisposing cause, which is aided and abetted by the chemical reagents and perhaps mechanical means.—*Dental Cosmos*, 1873, vol. 15, p. 461.

Hollander defines erosion as the condition better known as abrasion, in which the surface of the teeth, also the facial side suffer from peculiar abrasions, for which it is very difficult to find a mechanical explanation. In such cases the author believes that exfoliation of the enamel takes place first and that thus the dentine is exposed and through mastication is worn off until the front teeth no longer meet.—*Verhaudl d. Dent. Odont. Gessell.*, bd. 1, 1899.

Hunter was perhaps the first to record this affection which he termed decay by denudation. After having alluded to the singular appearance these cases present, as if filed and highly polished, he concludes as follows: "From its attacking certain teeth rather than others in the same head and a particular part of the tooth, I suspect"

it to be an original disease of the tooth itself, and not to depend upon accident, way in life, constitution, or any particular management of the teeth." J. Hunter, "Natural History of Human Teeth."

Dr. Murie cites a case of erosion in a sea lion (*otaria jubata*) where he says, "all will admit there was little chance of a tooth-brush having been used." Not only the whole of the smaller sized molars and premolars, but also the great canines of both upper and lower jaws were worn in a circular or grooved manner, as if compassed by a ring in the middle. The canines were not so deeply completely furrowed around, but rather deeply excavated behind. The tips or crown of both canines and grinding teeth were ground down and flattened to a certain degree only. The worn surface was blackened, smooth and highly polished. Murie also found erosion from periosteal inflammation in a tusk of a young Ceylonese elephant. The neck of the tooth was extensively and irregularly absorbed. The root was contracted towards the base and the pulp cavity filled up.

Respecting the conditions of the sea-lion's teeth, Murie remarks, "To my mind, neither the supposition of inherent disease, nor simple friction of a certainty accounts for the common manner in which the otary's teeth have lost substance."—Trans. of the Odont. Soc., 1870, w. s., vol. 2, p. 272.

Baume believes that the superficial layer of dentine not covered by gum tissue or by enamel dies and falls out mechanically, being exfoliated by the friction of the lips, brushes, etc., that chemical erosion is very unequal and that it is formed by a line of cup-shaped cavities, analogous to Howship's lacunæ.—Frey, *Dental Cosmos*, 1901, vol. 43, p. 720.

Tomes has concluded that "Absorption can not be called into account for the removal of the tooth-substance, for it often takes place at spots remote from any structure capable of developing an absorbent organ, and it seems that we must fall back upon the idea that it is an example of chemical solution. But whence the solvent comes, and why the affected surfaces are not the site of ordinary caries are questions which remain unsolved, though it seems probable that mucous, by fermentation, or affording a nucleus for fermentation, may provide an acid solvent."—Bailey, *Am. Jour. of Dental Science*, 1822-3, third series, vol. 16, p. 214.

Magitot records erosion in a cow observed by M. Goubaux. The animal was four and a half years of age; it had four teeth of the second and four of the first dentition. The anterior face of the two central incisors presented a deep transverse furrow, entirely horizontal, situated at the upper third of the crown, and at an equal level for the two teeth.—“The Anomalies of the Teeth in Man and Animals,” 1877.

Dr. Hayward, of Liverpool, in discussing erosion says “that all the causes which are capable of interfering with general nutrition—accidental and physiological causes included—are capable of producing erosion of the teeth.”—*Dental Register*, 1883, vol. 37, p. 120.

Hutchinson says that mercury given in infancy is one of the causes of eroded teeth. Moon and others have also carefully investigated cases of this kind and have arrived at the same conclusion.—*The Dental Register*, 1883, vol. 37, p. 124.

Dr. Eleazer Parmley, of New York, some years ago reported a case in which erosion attacked several teeth that had been set upon an artificial piece in exactly the same manner as the teeth having natural attachments to the alveolus.—Marshall, *Jour. Am. Med. Assoc.*, 1883, vol. 2, p. 633.

Harrison said that he at one time thought erosion must be due to certain absorbents in the teeth themselves, not yet discovered, but was obliged to abandon his theory on seeing an artificial lower piece presenting this abnormality. The denture had been carved out of the hippopotamus tusk, and had been in the mouth about two years. When first discovered by Harrison a number of transverse lines were running from canine to canine. Inquiry proved that it could not be due to excessive use of the tooth-brush. He, therefore, abandoned his old theory and concluded that it was probably produced by some peculiar action of secretion, or of the absorbents, or of both, of the mucous membrane of the lower lip.—Bailey, *Am. Jour. of Dental Science*, third series, vol. 16, p. 212.

Mr. Coleman alludes to the action of saliva in the production of erosion, and in support of that theory, mentions the wearing away of stones by the continual dropping of water.—Bailey, *Am. Jour. of Dental Science*, 1882-3, third series, p. 215.

Znamensky, professor at the University of Moscow, has carefully studied erosion under the name of “cuneiform defects,” and accord-

ing to him these defects are but a modification of the dentine—a modification that may occur even outside of the mouth, but whose production is facilitated in certain conditions as yet unknown, and probably due to the diathesis of the individual. Znamensky does not believe that the enamel plays any part in the formation of erosion, but says it is due “to a disappearance of the cement substance and to the swelling of the organic portions of dentine.”

He believes that the starting point of the affection is in the organic substance, which he terms dentoidin, which would disappear in greater or lesser quantity, and considers erosion in some way as a dentinal function independent of all chemical or mechanical action.

—*Jour. of the Brit. Dental Assoc.*, 1898, vol. 19, p. 8.

Professor Weal found erosion upon the milk teeth in a part of the jaw found in a cystic new formation of the ovary, which places both chemical and mechanical agents out of question. Cystic liquid is never acid, but always of alkaline reaction.

Erosion has been found on elephant's tusk, which are not in the mouth cavity and are not washed with saliva.—Znamensky, *Jour. of Brit. Dental Assoc.*, 1898, vol. 19, p. 13.

Kirk, of Philadelphia, before the New York Odontological Society, describes erosion on a base carved of hippopotamus ivory. The erosion was not upon the teeth at all, but was on the ivory base plate. In the artificial denture a number of cavities of decay were also found.—*Dental Cosmos*, 1898, vol. 40, p. 747.

W. Finley Thompson, of London, has given much study to erosion and says that it produces similar results to caries, but that there is a recognizable difference between the two. Caries may attack teeth of apparently strong structure, and evidences of resistance to disease are manifested by layers of semi-calcified dentine, which retain with great tenacity their connection with the normal tissues; but in erosion portions of the teeth seem fated to complete disorganization, the mal-conditioned parts presenting parietes of high polished surfaces, giving an appearance of wear, or cavities designedly made.—*Dental Cosmos*, 1880, vol. 22, p. 505.

Bell says in erosion: “The groove is perfectly straight and continuous through its whole extent, and is often regular and smooth as if it had been formed by a fine round file and afterward polished. When the bone has been exposed by this process, it sometimes be-

comes very slightly discolored, but remains for a long time perfectly hard and sound, and seldom exhibits any appearance of gangrene.—Quoted by Bailey, *Am. Jour. of Dental Science*, 1882-83, third series, vol. 16, p. 212.

Dr. G. J. Friedrichs, of New Orleans, stated that about 10 per cent of his patients suffered more or less from erosion. He pronounced the disease a specific of caries of the enamel usually appearing in several teeth at a time.—*Dental Cosmos*, 1879, vol. 21, p. 621.

Edwin T. Darby was always of the opinion that general affections produced acidity of the buccal mucosa, and that the teeth thus became decalcified. The frequency with which rheumatism and gout are connected with erosions led him to believe that these general affections are the real cause of the erosion.—*Dental Cosmos*, 1892.

C. Edmund Kells' theory as to the cause of erosion is as follows: On the one hand, the erosion which corresponds to the labial and buccal sides is due to acid secretions of certain mucous glands; on the other hand, the erosion of the lingual and masticating surface is due to the acidity of the saliva.—*Dental Cosmos*, December, 1891.

Fairbank said erosion usually occurs in very clean mouths and never exists in persons who suffer from the particular form of indigestion which is associated with the decomposition in the stomach of the ingested food. In his experience it usually attacked the necks of teeth, but even when by recession of the gum more of the fang of the tooth became exposed, the erosion invariably spread upward towards the crown, never downward towards the apex of the fang.—*Trans. of the Odont. Soc. of Great Britain*, 1888, vol. 20, new series, p. 168.

Stocken believes he has traced a connection between the gout and the onset of erosion. Acting upon the idea that gout produces a general condition of acidity, he advised such of his patients as were afflicted with gout and erosion to employ an alkaline tooth powder, and he has found this treatment very successful.—*Trans. of the Odont. Soc. of Great Britain*, 1888, vol. 20, new series, p. 169.

Bailey believes that erosion is caused by the mechanical action of the fluids of the mouth. It would give the lips, tongue, etc., a secondary position, considering that they chiefly act as motive powers to the fluids. He says: "In the first place, all cases of erosion are in a position subject to the action of the oral currents; for

the fluids may take such varying directions in different mouths, and even in the same mouth. We know that a small thing is sufficient to vary the current of a running stream, and in like manner a small cause as a slightly projecting tooth may be quite enough to determine the direction the fluids may take. Secondly, the characteristic shape of the cavity is such that it will always form a channel along which fluid can pass unobstructed.

"Thirdly, though all cases can be accounted for by this agency, there are certain cases which I can account for in no other way. These are some of the reasons why I incline to this view."—*Am. Jour. of Dental Science*, 1882-3, third series, vol. 16, p. 215.

Erosion is more commonly seen upon the labial aspects of the teeth, especially the bicuspid, but it also does occur upon their lingual surfaces and in other spots inaccessible to the tooth-brush, which proves that it does not arise from the friction of that appliance, as some have supposed. It is also stated to be met with in some of the lower animals. It resembles very much in appearance the wearing away of a tooth at its neck by the friction of a clasp to support a denture, such clasps invariably retain small portions of food, bread substance especially, so that the rapid loss of substance is probably something more than friction.

There are cases recorded where the enamel of the two upper central incisors has suffered, and in persons of good constitutions. In one instance, under observation for more than twelve years, the disease appeared on the labial surface of the enamel midway between the cutting surface of the tooth and the gum. As it progressed there was no discoloration, and the surface presented was highly polished and intensely hard and sensitive. Eventually one of the teeth broke off, the pulp having become dentinified in the progress of the disease; the other has remained in much the same condition for a number of years, the patient a lady, age now about 35, having most assiduously kept the cavity sealed with white wax. The author was inclined to attribute the condition above described to the solvent action of an acid secreted by certain labial and other mucous glands. —Coleman's Dental Surgery and Pathology, p. 130.

Erosion of the teeth is a disease peculiar to the enamel and presents three varieties in its development. The first consists in spots of a milky whiteness or of a deep or a light yellow, irregular,

and situated in the enamel and does not affect the polish. These spots can not be effaced. The second variety, like the first, affects only the enamel, and it presents little crowded holes, resembling quilting, irregular depressions, whose surfaces are not always polished, or even transverse sinuosities, single or divided by prominent lines. It is sometimes yellow, but usually the color of the enamel. The third differs very much from the preceding, for it affects the whole dental substance, particularly the bone of the tooth, which is only imperfectly developed. The tooth is often entirely or nearly deprived of one of its parts. Sometimes its crown is reduced to one-third of its natural size; sometimes it is divided by a deep circular depression; at other times the grinding surface of a molar presents a kind of cavity.—F. Mawry's *Dental Surgery*, p. 73.

Schlenker, Walkhoff, Scheff, Bastyr and Brandt advance and support the chemico-mechanical theory—that is: Under the influence of chemical elements of a more or less acid character a thin layer of dentine is decalcified. This softened portion is removed in the act of cleaning the teeth, and by the friction of the cheeks and lips during mastication. The surfaces become glossy from friction and are of a hard consistence, since only the softened portions can be removed.—Frey, *Dental Cosmos*, 1901, vol. 43, p. 719.

D. E. Wiber says the tooth-brush has been unjustly blamed as instrumental in causing this affection, which statement may be contradicted by pointing out the fact that erosion occurs on the lingual surfaces, and inaccessible portions of the teeth. He furthermore says: "It may, after the groove has been formed, increase its size; also it may determine the commencement of this groove, but no conceivable use of the tooth-brush could cause this action."—*Am. Jour. of Dental Science*, 1894-95, vol. 28, n. s., p. 488.

Billetter, of Zürich, intends by erosion only the defects of the teeth appearing in later years, the real cause being friction. In rare cases he has seen the teeth eroded by the gums. In the progress of this process the pulp becomes ossified. Under the microscope, he says, grooves in eroded teeth have the appearance of senile dentine.—Scheveiz, *Vierteljahressch. f. Zahnheilkunde*, March 1891.

Dr. W. H. Trueman advocates the chemico-vital theory, and says: "Solution is not necessarily a chemical process. The idea that this destructive agent must be an acid having an affinity with the lime

salts of the tooth has little but tradition to support it. The little cap which we frequently see, mainly of enamel, all the remains of a baby molar, is sufficient evidence that there may be, and is formed in the oral cavity, a true solvent of tooth tissue. I know this effect has been produced by a normal physiological process." He further suggests the idea of stomachic digestion as parallel to erosion, and excludes chemism as being only a minor agent.

In opposition to this Prof. James Truman says: "Erosion and abrasion are extremely simple—governed by a law of chemical action" and that "erosion is the result unquestionably of chemical solution."—Quoted by Dr. Elliot, *Dental Register*, 1892, vol. 46, p. 112.

In an editorial on erosion, the writer states that although in many cases neither vigorous brushing nor eating of acid fruits can produce abrasion or erosions of the teeth, yet numerous instances of such waste of the dental tissues are seen which can not be traced to any such immediate causes, and the questions are asked: "Is not the condition of the teeth then the essential factor in this peculiar destructive process? And shall we not ultimately learn to look at the other side—the systemic side—of the teeth to combat the predisposition? When the latter is found to exist we must, of course, interdict exciting causes so far as we know them, but the destructive process generally goes on, notwithstanding the sedulous obedience of such injunctions, and the result gives but little reason to connect such mechanical or chemical agents with the unfortunate condition, as cause and effect."—*Archives of Dentistry* 1885, M. S., vol. , p. 239.

Both Znamensky and Black made experiments on teeth to discover if possible the cause of erosion, and while both assumed that teeth affected with erosion were abnormally soft, yet they endeavored to account for it in opposite ways. Dr. Black supposed it to be due to an acid decalcification of the lime salts while Dr. Znamensky attributed it to a solution of the animal or organic solution of teeth.—*Jour. of the Brit. Dental Assoc.*, 1898, vol. 19, p. 554.

Dr. Black has produced, by the prolonged action of dilute acids upon teeth, a condition in some respects resembling erosion. In one experiment he records two fresh, healthy bicuspid teeth were placed with their proximal surfaces together, gutta percha being enveloped round the roots so as to have only the crowns exposed; these were then placed in a jar containing dilute hydrochloric acid (1 in 400), the

teeth being arranged in such a way that the current in impinging upon their outer surfaces, struck one with greater force than the other, the result being the disappearance of the cusps and the formation of a groove between the teeth; this groove was more marked upon one which receive the greater force of the current. A large number of other observations were carried out, and it was found that strong solutions produced general softening, while a solution of 1 of acid in 5,000 of water had not an appreciable effect after three months' trial.—*Amer. System of Dental Surgery*, vol. 1, p. 1004.

Dr. A. W. Harlan says: "Most of the erosion that we have on teeth, if not begun by the use of these feeble, diluted acid lotions and washes, are carried along by them, and by too frequent use of tooth-brushes, tooth-rubbers, tooth-pastes, and powders containing ingredients that are not soluble in the fluids of the mouth or in water. Half of the ridges and grooves, and even disfigured faces of teeth that we see, are brought about through these means."—*International Dental Journal*, 1898, vol. 19, p. 406.

Miller, of Berlin, has placed teeth in a 5 to 10 per cent solution of caustic potash and after some weeks the ends of the roots could be crushed between the fingers and easily cut with a knife. They are not decalcified but disintegrated. Miller states that if decayed teeth are placed in the same solution, the decayed dentine will in the course of time be completely dissolved. The question then arose whether there may not be other substances in the human mouth under certain conditions which, in the course of years, may in a similar manner dissolve out the organic basis substance of the teeth, leaving the friable tissue to be worn away mechanically. And Miller suggests that it might be well in the future while searching for the cause of erosion to bear in mind that the teeth may be acted upon by agents which attack primarily the organic as well as those which attack only the organic constituents.—*Dental Cosmos*, 1890, vol. 32, p. 255.

Magitot, of Paris, in a paper entitled "Erosion of the Teeth Considered as a Retrospective Sign of Infantile Eclampsia," states that these enamel defects are the consequences not so much of stomatitis as of some interference with development brought about through the nervous system in connection either with infantile convulsions or severe illness in early life.—*Trans. of the Internat. Med. Congress*, 1881, vol. 4, p. 128.

Michaels attributes erosion to the action of pathologic saliva and believes that the labial salivary glands play an important role in the production of erosion. "These are situated between the muscular coat of the orbicularis oris and the mucous membrane, which is raised on account of their presence. They are more numerous on the lateral portions than at the level of the commissures. These glands are situated in the substance of the submucous connective tissue. In order to examine these glandular orifices, the lip is raised and turned outward; it is then dried. After a minute the small drops of liquid which they secrete may be seen on the surface."

In order to prove his hypothesis of a chemical reaction in the pathogenesis of erosion, he made the following experiments; He placed in a liter of water one gram of potassium sulfocyanid. He plunged into the sulfocyanid solution one of the arms of a capillary tube in the shape of an inverted U; the other one was very pointed, and had attached to it a metallic wire, which held a tooth. After several days the surface of the enamel presented erosions absolutely similar to those found in the mouth of individuals suffering from this lesion.—Frey, *Dental Cosmos*, 1901, vol. 43, p. 719.

Dr. Edward C. Kirk, in a clinical and chemical study of a case of dental erosion believed that an investigation of the oral fluids would reveal the cause of the difficulty. The view appeared hopeful, for the reasons that, believing the erosion to be due to an acid acting upon the tooth-structure, one would naturally expect to find in the oral fluids the salts produced as the result of such action; but, as the result of the investigations by ordinary chemical methods proved practically negative, Kirk devised a new method of examination, which consists in the microscopical examination of dialyzed saliva.

His next difficulty consisted in the identification of the crystallized forms found in the dialyzed saliva. Certain known facts in the case suggested the possibility that the acidity was perhaps the result of lactic fermentation. Hence, he compared the salts found in the dialyzed saliva with those produced by the action of lactic acid upon tooth structure; still, as lactic acid might possibly be the dissolving agent, all of the compounds which acid sodium phosphate forms with the basis of the tooth were made.

The comparative study of these compounds with the salts of the saliva using the micropolariscope in this particular case was due to

the presence of lactic acid in the fluids of the mouth—as the only salts Dr. Kirk found in the saliva were lactates or lacto-phosphates, although evidences were found of the presence of the acid calcium phosphate, which is an exudate from the mucous glands, and also some traces of acid sodium phosphate.

The determination of the solvent in this case and the general nature of the disorder makes it necessary to divide cases of erosion in two classes, viz., those in which erosion is general and those in which the phenomenon is due to the exudate from an abnormal buccal mucous gland or glands, the acidity of which is due to one of two agents, the acid sodium phosphate or the acid calcium phosphate.—*Items of Interest*, New York, July, 1902.

Dr. Harry Barnes, of Cleveland, wrote on two distinct forms of erosion: A systemic acid erosion or erosion caused by acids formed within the system, and an external acid erosion or erosion caused by acids taken into the mouth, notably the acids of the lemon, orange and grape, as well as those acids taken in the form of medicine. Erosion, he said, is frequently accompanied by abrasion and is often misnamed. For convenience, he called this form abrasive erosion.

Systemic erosion, he believed, may be found upon the buccal and labial surfaces of the teeth, also the occlusal and incisal edges. It is rarely found upon the lingual surfaces of the posterior teeth, but is sometimes found upon the lingual surfaces of the upper front teeth. Its greatest destruction is seen at the angle of the jaws. He describes the case of a man, aged forty, in whom some of the teeth had been the seat of erosion, while others were free from it. Regarding the reason why some of the teeth are diseased and others not, the author stated that decay is most prevalent upon that side of the mouth on which the patient habitually rests the body during sleep, and said that this has a very important bearing upon the case, and offers the same reasons for the peculiar manifestations presented in erosion. He said that he did not expect everybody to agree with him now, but felt certain from long continued investigation of cases that this is a fact, and so declared it. He quoted Dr. Michael's investigations regarding the greatest destruction of tissue at the angles of the mouth, which he found to be due to the acid secreted by the mucous glands found at this point.

Barnes asserted that the buccal fluids exuded by these glands sometimes are acid, and that destruction of teeth must naturally follow the contact of this fluid with the teeth. The case he exhibited was from a right-side sleeper, therefore all teeth affected are those which would be immersed in the fluids of the mouth at that time. The patient sleeping upon the right or left side will place the head to the right or left of the line of the body or downward. The position upon the pillow will cause certain surfaces of the cheeks and lips to be drawn tightly against the opposite surfaces of the teeth, and certain other portions will be pushed from the inner surfaces, forming a pocket. In this pocket will flow the oral fluids, which, if acid, become during the hours of sleep more and more vitiated, probably due to growth of bacteria or other products. This pocket has its most dependent portion at the angles of the mouth, and this he believes to be the reason for the prevalence of the erosion on these surfaces. The erosion of the occlusal surfaces is caused by the teeth being held slightly apart during sleep, and by capillary attraction. Erosion that appears upon individual teeth is probably due to irregularities on the surface of the lips and cheeks, which holds the fluids against the teeth at the areas of tooth surface so affected.—*The Dental Summary*, October, 1902.

H. A. Smith cites a case of "erosion of the central incisors upon the labial faces a few lines below the termination of the enamel." One tooth had been devitalized, the other was normal and both were attacked by erosion precisely alike. In this case the theory of interstitial waste or diminution of the nutrition of a tooth and the consequent wasting away of the hard tissue upon the surface of the teeth, as well as the theory that the tissues of the free margin of the gum secrete a fluid which either dissolves or digests the enamel and dentine, producing erosion, was disproved in this case, and Dr. Smith suggests that the mucous membrane overlying the particular territory affected, secretes an acid which dissolves the lime salts, thus causing erosion. To test this he advises the application of freshly prepared blue litmus paper to the surface of the mucous membrane supposed to secrete the acid.—*Dental Register*, 1892, vol. 46, p. 114.

Taft says that if this affection is induced by an acid contained in the mucus, as many suppose, then it must be some acid with whose nature we are but little, if at all, acquainted; or, if any ordi-

nary acid, it certainly must be modified by very peculiar circumstances so that it affects a solution of both the animal and the earthy constituents. Furthermore, he says, if the affection results from the operation of an acid in the mucus, why does not this acid, to some extent at least, affect the teeth at other points? Such is not the fact, and caries that have previously commenced at other points on the teeth, do not progress more rapidly during the existence of this disease than before; but it certainly would if there were a large quantity of acid in the mucus.

Taft concludes that the origin of this affection lies in the constitution, that it is not merely local, and that its arrest must be effected chiefly by constitutional treatment.—Operative Dentistry, 1883, p. 39.

Dr. Leon Frey, of Paris, contributes an article on chemical erosion of the teeth in which he gives a complete description of this form of disease. Upon teeth that are generally large, white and polished and which are not covered with tartar, it begins as a very limited spot, but gradually increases in size, which varies; sometimes the loss of substance is limited to a horizontal direction; it may take the form of an undercut, or may affect the entire surface of the tooth, diminishing the thickness of the crown upon its entire extent. These conditions appear more frequently upon the labial surface and sometimes upon the lingual. The margins of the eroded surface are very well outlined, just as though they had been prepared with a saw.

The coloration of the erosion is most variable. Ordinarily it is of the color of the teeth, with a polished appearance but can be of a deeper yellow, brownish, and even nearly black. The same surface may present several colorationss; the center may be very deep, while the periphery is lighter, becoming confused with the remaining portion of the teeth. The consistence of eroded tissues also varies, and the darker the bottom of the cavity is the more resistant will be the tissues under the excavator; when the surface is rough, the hardness and sensitivity are less.

The sensitiveness of the eroded portion is not always the same. When the dentine is not discolored, even to slight contact of the finger nail, but when the dentine is dark the sensitiveness is less.

This "cuneiform deformity" develops first with the retraction of

the gums, the neck of the tooth is exposed, a layer of cement disappears, leaving the dentine unprotected, and small saucer-shaped cavities separated from each other are formed. The erosion becomes gradually deeper, the progress being usually very slow. At this stage of the disease the pulp begins to react by producing secondary dentine. This secondary dentine sometimes completely fills up the pulp-cavity. Notwithstanding this production, the erosion may become deeper all the time until it reaches the opposite side and separates the crown from the rest of the tooth.

The anterior teeth are more frequently attacked than the posterior and, according to Frank Acker, those of the right side more often than those on the left. One tooth alone may be affected or all the teeth. The same tooth may be eroded in several phases. The teeth of the superior maxilla are more liable than those of the inferior.

The question of etiology appears still to be in obscurity. Chemical erosion is found in all periods of life after the ages of twenty or twenty-five; there is no record of cases in young persons. Frey believes that it attains its maximum development and acuteness from thirty-five to fifty years. The proportion of men suffering from erosion is greater than that of women. It is observed in all latitudes, but the warm and humid climates exercise an undeniable predisposing cause. Arthritism, especially the form having gouty manifestations seems to be a predisposing cause.—*Dental Cosmos*, 1901, vol. 43, p. 716.

Arthur S. Underwood, calls attention to a new factor in erosion, that of interglobular spaces, calcospherites, in human enamel. He says he has never found these spaces except in enamel which was subject to erosion, and usually found it scattered through the whole of enamel which was so affected. He states that he is the first to show interglobular spaces in human enamel, although every student of Rainey and Ord, who accepts their theories of calcification must suppose that imperfect enamel should contain these appearances. Two photographs accompany his article showing the interglobular spaces under high magnification. The two patients from whom the specimens were obtained were both victims of very extreme and very typical erosion. The shiny grooves, sometimes with sharp edges, ran all over the surfaces of most of the teeth. Caries are present and Underwood says he stained the micro-organisms with methyl-

violet to show the two forms of destruction in marked contrast.—*Internat. Dental Jour.*, 1898, vol. 19, p. 669.

Dr. E. Maire, of Paris, says the cause of erosion is either interruption or disturbance in the formation of the dental tissue. Instead of the layers being regular, interglobular spaces show that there was interruption of the deposit of osseous substance.

Erosion of the enamel is of still more importance, and it has been noticed that during the course of a disease, the surface of the tooth loses some of the enamel and the erosion assumes a grooved appearance.—These de Paris, 1898.

Harris in his "Principles and Practice of Dentistry," says that the progress of erosion is exceedingly variable. It is sometimes so rapid that the dentine becomes exposed within two or three years from the commencement of the disease; at other times its effect upon the enamel is scarcely perceptible for the first six or eight years after it makes its appearance. In the case of a lady whose teeth were thus affected, the denuding process did not perforate the enamel for nearly twenty years. The dentine, after it is denuded of enamel, is generally quite sensitive, and very susceptible to heat and cold—*Principles and Practice of Dentistry*, 1889, p. 355.

Dr. Friedrichs, of New Orleans, says that erosion is a wasting away of the substances of the tooth without the contact of anything known and his theory is that it is a chemical decomposition caused by eructations of gastric juices from the stomach.—*Dental Cosmos*, 1889, vol. 31, p. 802.

Louis Ottofy, of Yokohama, writes on erosion in Japan, and states that the erosion is of such a character, the like of which he had not seen in twenty years of observation. The possibility that something in the climate, food or other circumstance may be the cause of this condition led him to examine foreigners, none of whom were residents of Japan for less than twenty years. He tells of three cases, in all of which there was complete solution of the anterior half of the entire crown. In one instance, all of the teeth remaining in the mouth are thus affected; in another, the teeth affected vary, one tooth being dissolved to the extent of having the anterior half entirely dissolved, while the adjoining tooth on each side is wholly unaffected. He noted conditions in Japan which exist nowhere else to the same extent and states that possibly in Japan

the solution of this question can be formed.—*The Dental Review*, 1899, vol. 13, p. 702.

Lewis A. Obrian Jr., of Providence, R. I., says erosion is most frequently found at the necks of teeth, where it channels out the tooth substance, sometimes to such an extent as to expose the pulp. In other cases the labial faces of the teeth are seen to be covered with little pits of varying size and depth. In all cases of erosion an acid condition can be proven to exist either in the gums or lips by carefully drying the parts and then placing litmus paper over them. Upon removal it will be found that it has discolored.

The cause of the formation of these absorptive cells is found in the presence of an irritant of some kind. This irritation of the tissues may be produced in many ways; some of the most common are malocclusion, hard rubbing with stiff brushes, and the ulceration of some of the many glands found in the lips. The acid thus secreted by the giant cells coming in contact with the teeth, acts upon them in such a manner as slowly to eat away the tooth substance and results in what is known as erosion.—*Dental Cosmos*, 1888, vol. 30, p. 729.

Dr. W. X. Sudduth says a lowered nervous condition will result in salivary acid, which will never produce decay, but may produce erosion. Decay of the enamel is a process of decalcification, and may come from an acid condition. It is erosion, and if the action of the acid is local, the acid arising from a localized inflammation of the mucous membrane of the lip, cheek or gum-tissue, still it is erosion.—*Dental Cosmos*, 1889, vol. 31, p. 716.

Dr. M. L. Rhein says: "In all of the diseases where there is more or less of starvation of the tissues in progress, the oral fluids will become more or less acid, in proportion to the gravity of the general pathological state. As a result of this pyorrhea complex and erosion of the teeth are frequently concomitant local results of the general disorder. In many patients who have been taught to take the best hygienic care of the mouth, we will find erosion without accompanying pyorrhea; but in those forms of pyorrhea complex where the general pathological state produces a lessened alkalinity of the circulating fluids, there is generally more or less marked evidence of erosion about the necks of the teeth. It has been fairly well demonstrated that when the oral fluids persistently show acid reaction,

we can with a high degree of probability expect to find an excess of uric acid in the system."—*Dental Cosmos*, 1895, vol. 37, p. 686.

Dr. Morgan says erosion is that form where the enamel was originally imperfectly crystallized. It will follow after certain diseases, as measles, smallpox, or scarlatina, and the experienced observer can actually tell very closely by examination of the teeth, the time when such diseases were experienced.—*Dental Cosmos*, 1889, vol. 31, p. 801.

F. J. Bennett found two quite different forms of erosion, one characterized by a highly polished condition of the enamel, and the other by the presence of a black film covering the enamel. He had in some instances noted the existence of this film by the covering, gutta percha, inserted in the tooth as a filling. On removing the gutta percha the film was distinctly evident upon it. He stated that eroded teeth looked often just like what would be seen if artificial teeth had had their surface cut away, and had then been highly polished, so that the entire surface seemed denuded.—*Trans. of the Odont. Soc. of Great Britain*, 1888, vol. 20, p. 169.

W. H. Reaben states that it appears that the process of erosion of the dentine is much slower than the progress of the same process on enamel. This is probably due to the fact that enamel is more thoroughly mineral matter, and it is therefore more readily soluble in the peculiar acid which erodes enamel. Vitality of the pulp has little to do with this form of solution. In fact, pulp vitality plays very little part in retarding any form of destructive influence.—*Dental Headlight*, 1902.

George Cunningham related that he saw in Vienna a tooth which, after being rubbed with a tooth brush and powder for two hours, became worn in a way closely simulating erosion. He says, in erosion occurring ordinarily, many features existed which seemed to point to a possible mechanical factor existing in the causation of the trouble. Thus, erosion commences at the cemental margin of the enamel, that is, at the point where the hard is united to the softer tissue, a point which would presumably be a weak one, and travels from the less dense tissue. Again, the peculiar cut-away look of erosion he thought would suggest a mechanical rather than a chemical causation.—*Trans. Odont. Soc. of Great Britain*, 1888, vol. 20, new series, p. 169.

Salter, in his "Dental Pathology and Surgery," says: "The cause of surface wear may be stated to be predisposing, consisting of inherent softness of structure which certainly exists in some syphilitic teeth, and probably in other conditions, and exciting causes, such as molar mastication with incisor teeth, gritty food, a hard tooth brush, certain tooth powders, especially vegetable charcoal, which usually contains particles of silicates of lime and potash. It is probable that in some cases the wearing is assisted by a solvent or softening action of the saliva, but the polish I believe is always occasioned by friction."—Quoted by Bailey *Am. Jour. of Dental Science*, 1882-83, 3d series, vol. 16, p. 213.

Busch believes that typical erosions of the permanent teeth are caused by affections which during the first two years of the child affect the formation of the crown in the maxillary cavity, especially those diseases complicated by epileptic attacks or convulsions or other serious diseases which might disturb the formation and the growth of the teeth.—*Dent. Med. Wochenschr*, 1886, No. 2.

The upper incisors and the cuspids are the most frequently affected. Other classes are affected, as to frequency, in the following order: upper bicuspid, lower bicuspid, cuspids and incisors. The grinding surfaces of molars are frequently attacked and sometimes the cutting edges of incisors. The cause is unknown. It is attributed to acid secretion of the mucous follicles, to defective structure, and to the use of stiff brushes and coarse, sharp powders. Weakened nervous power is recognized as a predisposing cause.

Hutchinson, of England, says erosion is equally present in patients of eighty and in patients of twenty or thirty; in males and females: smokers and non-smokers; in dyspeptics and in those who do not suffer from indigestion; in those who take the utmost care to be cleanly and in those who do not; in those who use powders and in those who use only water or some liquid dentifrice; and is always just the same thin, almost invisible coating over the whole eroded surface, but never on the healthy enamel surrounding.

It is observable in its earliest stage by a circular facet like wart, which is usually depressed in the center, but can be recognized when the facet is not more than $\frac{1}{32}$ of an inch in diameter, and the unvarying characteristic, which Hutchinson claims to have discovered, is a curious film of discoloration, so attenuated that it can

only be seen by the aid of a strong hand lens, but when once recognized can never be mistaken; it is always present in true erosion, states the author, but is absent from the surrounding healthy enamel. It can be scraped from the surface of the facet by a blunt burnisher, and under the microscope reveals nothing but small circular scales like epithelial cells, but much smaller; it is always quite black, but as it is so thin the blackness is only perceptible by contrast, or when aggregated by scraping. For this condition Hutchinson says he has hitherto failed to find a sufficient explanation.—*Trans. of the Odont. Soc. of Great Britain, 1888, vol. 20, new series, p. 164.*

Fox believes erosion to be dependent upon some solvent property of saliva. Harris inclines to the belief that the loss of substance which characterizes the affection is produced by the action of acidulated buccal mucus. In every other part of the mouth this fluid is mixed with saliva, and the acid it contains so diluted as to prevent it from acting on other portions of the teeth. Garretson believes with Kincely Bridgeman in the electro-chemical theory of decay. In this theory, says Garretson, will be found to lie not only the cause of the disease, but also the prophylaxis. He again says: "It would seem, however, that back of the immediately acting cause must be predisposition; here it would seem to be the result of impression made on the enamel at the period of its formation, and which deficiency the nutritive functions have failed to correct. It might, indeed, very well be that such enamel is entirely deficient in vital resistance, and thus subject to be acted upon as any inorganic structure, being electrolytic action simply dissolved."

Marshall is inclined to accept Bridgeman's theory and says: "This theory also explains one of the very common and at the same time peculiar phenomena of the disease, viz.: the undercut condition of the grooves at the border nearest the gum. It is a law of electricity that the main current always flows from the positive to the negative pole, and that the positive element is most readily acted upon and soonest destroyed. The same laws govern like conditions in the mouth. The root of the teeth being positive and the crown exposed to the atmosphere (and not protected by fluid) negative, the greatest waste would be toward the root or positive pole, and as soon as the gum line was nearly reached the external surface would be protected by the fluid always present at this point and

the loss of substance cease, while the other portions toward the root would be acted upon with the original intensity, and thus in time would occur the undercut condition."

Marshall calls attention to vital resistance as an important factor in the problem, which doubtless exerts a powerful modifying influence over electro-chemical action. In his observations, he has noticed that the teeth most often affected with erosion, were those that usually are classed as medium or soft teeth, low in vital resistance, the patient often inheriting a peculiar cachexia, the scrofulous or syphilitic, which has had a depressing influence upon the developmental process, thus lowering the power of vital resistance and predisposing the teeth, as well as other organs of the body, to the ravages of disease.—*Jour. of Am. Med. Assoc.*, 1883, vol. 2, p. 633.

Magitot, of France, says this inquiry takes so specific a form that it is not possible to confound it with other lesions. It is always in horizontal furrows, sometimes simple, at other times double and triple for each tooth, but always superposed and parallel, and placed at exactly the same level upon homologous teeth; for this lesion is never found, according to the author, upon a single tooth, but is common to the singular teeth of the same jaw, or simultaneously of the two jaws. The author furthermore states that under the microscope an examination of a complete section of an eroded tooth shows very interesting peculiarities in the depth of the ivory in intimate correlation with the external lesion.—"Magitot's Dental Caries," Chandler, p. 53.

Dr. Chase, before the Illinois State Dental Society, at Rock Island, in 1873, advanced the theory of vital action in erosion. He wished to impress the fact that vital action will soften and absorb the dentine from under a perfectly water tight filling; had observed cases in which, after the tooth had been filled for years, he had found upon removal of the filling, that the pulp was largely exposed; could not suppose that this condition had existed ever since the tooth was filled, four or five years ago. This, he says, is vital action.—*Dental Cosmos*, 1873, vol. 15, p. 540.

C. L. Snyder writes on erosion in the Orient and says that while in America this disease seems to affect the central and lateral incisors, in Singapore the first bicuspid's seem to be the first sufferers. These are followed closely by the cuspid's and second bicuspid's, then the incisors, and lastly the molars.

He found that erosion usually occurs in pairs, that is, when the bicuspid of one side is affected the same condition is looked for on the opposite side of the mouth.

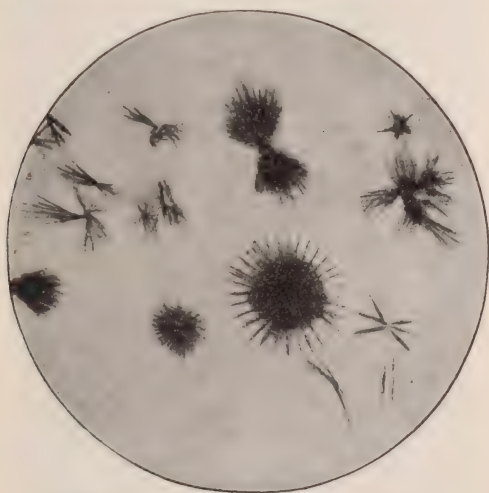
In Singapore he found that out of one hundred patients who came to him for dental services, fifty-seven suffered more or less with erosions. The attacks were about the same upon male as female. A great difference, however, exists in nationalities. The English were the worst sufferers, then came the French. One peculiarity of this complaint was that most Europeans had not had any trouble before leaving their native land. High livers seemed to suffer most and about 70 per cent were suffering with gout or were the offspring of gouty parents. He thus sums up his conclusions that erosions were peculiar to three conditions: High living, especially consumers of wines; a gouty diathesis and climate. In his opinion erosion is caused by an acid condition of some kind, peculiar to a physical condition of the system similar to that found in gouty subjects, and that this condition is due principally to the diet, is hereditary and is much hastened by a hot, moist climate.—*The Dental Review*, 1898, vol. 12, p. 107.

Mr. Sutton has shown that some cases of erosion are associated with constitutional bone mischief, and in summing up the subject, remarks that: "There are two things to bear in mind, the association of erosion with the constitutional bone disease, and with functionless and therefore imperfectly developed teeth. Serious disease during dentition often leads to ill-formed teeth, hence one circumstance asserts itself most in connection with erosion with the teeth in animals, viz., defective development. Whether constitutional disease and imperfect development can be regarded as causes of erosion occurring in human subjects I must leave to those more intimately acquainted with their teeth than myself, but it seems a very probable explanation.—*Trans. Odont. Society*, 1884-5.

Dr. W. S. Elliot in an elaborate article on "Erosion" read before the Ohio Dental Society in 1891, says that "if there is perversion of the glandular secretions and an increase of Leeuwenhock's corpuscles with augmented production of glucose and acid, then we must realize a proportional enhancement of tooth waste, and if we estimate this waste as a strictly chemical one we must consider what are the elements concerned in the reduction. On the

one hand is the acid, on the other the calcific constituents of the teeth. In this interchange the principal product can be none other than the lactate of lime. But when we estimate it from a chemico-vital standpoint we may deem the waste as more of a process of digestion, involving the necessary presence of the ferment, to which we have alluded, with the probable evolution of various complex bodies which remain undefinable.—*Dental Register*, 1892, vol. 46, p. 108.

During the summer of 1903 your committee searched the literature to ascertain the various theories which had been advanced on the subject of erosion as stated.



Tyrosin Crystal, Taken from Boston.

The latest theory and one of the few besides that of Drs. Black and Michaels, which appeared to be based upon scientific facts was presented to the profession by Dr. Edward C. Kirk, of Philadelphia, before the Second District Dental Society of New York, and published in the *Items of Interest*, July, 1902. It seemed our duty, therefore, to try and substantiate or disprove this theory and, if possible, to discover the true cause of this malady.

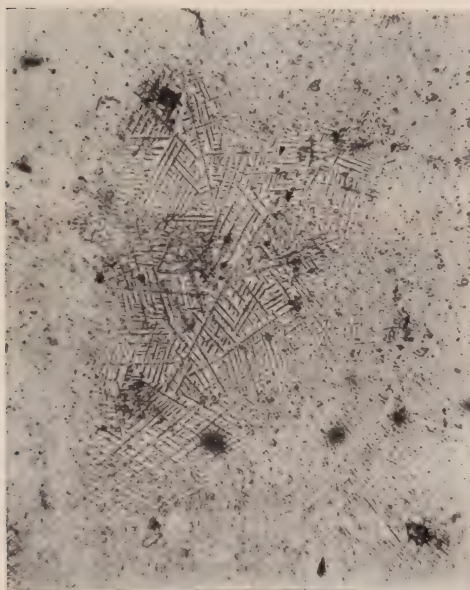
With this end in view we met for work on the third Friday evening of October, 1903, at the College of Dentistry, University of Illinois, and began a series of experiments which were continued



Crystal Taken from Erosin. No Other Forms Present.



Crystals from Second Erosin Case. No Other Forms Present.



Crystals Taken from Second Case Three Months Later.

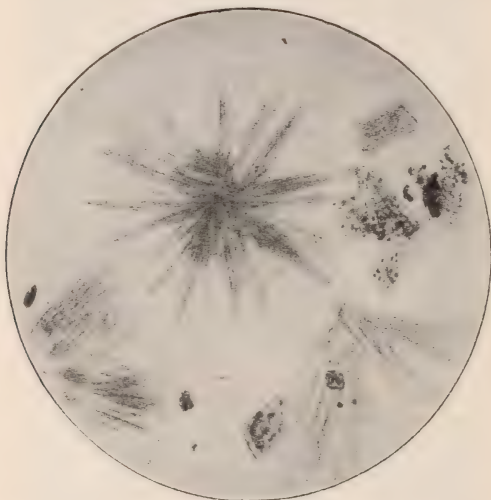


Aluminum Sulphate Crystals Made in Water.

every Friday evening, with the exception of two during the holidays, until the second Friday in April, 1904.

We purchased a polariscopic attachment for the microscope and such other apparatus as was needed, besides using the apparatus to which we had access belonging to the college.

Inasmuch as the saliva and urine of each member of the com-



Crystals of Calcium Phosphates. Taken from Boston.

mittee was examined polariscopically and compared before taking up cases of marked erosion, it might be well to state the general condition of our mouths.

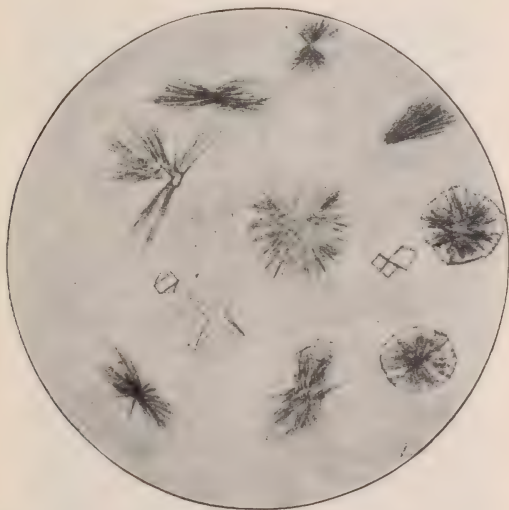
Dr. Hinkins has several fillings in his teeth, all of which have been in for a number of years. Saliva at this time was slightly acid and there was a slight tendency toward erosion on the left central incisor, just below a cervical gold filling. It is interesting to know that Dr. Hinkins' saliva has increased in acidity, during the past year, one-fourth of one per cent, and that the erosion has progressed rapidly for the past few months.

Drs. Cook and Buckley each have several fillings in the posterior teeth. Saliva always slightly alkaline and both practically immune from caries.

Specimens of saliva taken from the mouths of each and placed

under the micro-polariscope gave some fields with similar crystals, while others differed entirely. In most instances, however, the crystals had the same characteristics.

We now began the examination of the saliva taken from the mouths of patients whose teeth were affected by erosion. Each evening we examined at least twelve slides taken from the saliva and



Leucin and Tyrosin Crystals. Taken from Boston.

urine. In connection with this work, we made and examined many salts for comparative study. Among the number thus examined were crystals of calcium lacto-phosphate. This was prepared by treating calcium phosphate with lactic acid. After the reaction had taken place, it was diluted with distilled water, boiled, filtered and set aside to crystallize for one week, at the end of which time crystals were formed in a syrupy mass, showing an excess of acid used. Upon placing some of these crystals under the lens a tendency to the sheath-like appearance was noticed; but nothing resembling Fig. 7 in Dr. Kirk's article, *Items*, p. 521. In no instance were we able to duplicate Dr. Kirk's Fig. 7, from crystals of calcium lacto-phosphate, nor did we find any crystals in the specimens taken from the mouths of patients, whose teeth were affected by either local or general erosion, resembling the specimen which Dr. Kirk published

as calcium lacto-phosphate; and which he believed was formed in the mouths of patients whose teeth were affected by general erosion as the result of lactic acid dissolving the calcium phosphate of the teeth; and upon which he based his theory that all cases of general erosion are caused by the lactic acid which is formed by fermentation in the mouth.

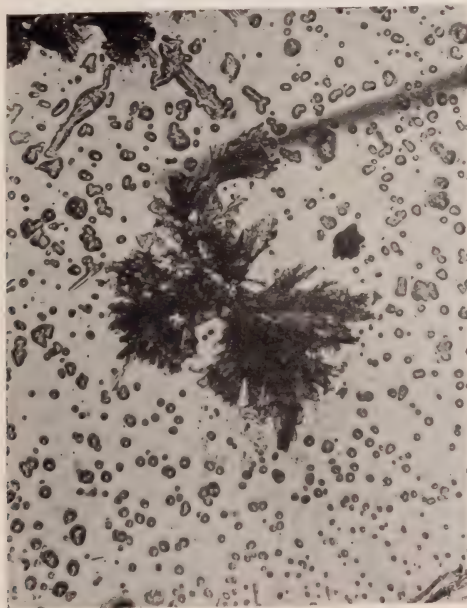


Crystals Taken from a Healthy Mouth. The Only Forms Present.

We now beg permission to direct your attention to some of the erosion cases which we examined under various conditions.

CASE 1.—Mr. M., age 29. The erosion is general, saliva always acid. A number of slides were obtained at different sittings. In these cases the saliva was placed on the clean slide direct from the patient's mouth. Some specimens were taken before and some after operating. The crystals in every instance resembled each other, and did not differ materially from those crystals obtained from the mouths of individuals whose teeth were unaffected by erosion. In two instances about 10 cc. of the saliva was obtained and dialysed after which specimens were placed on slides and examined. In neither

case did the crystals resemble those specimens taken direct from the mouth. This should be remembered in connection with a conclusion to which we shall refer again in this report. We also noticed that the crystals differed in saliva which had stood for twenty-four hours or more. This is true of all salivas, and is no doubt due to fermentation.



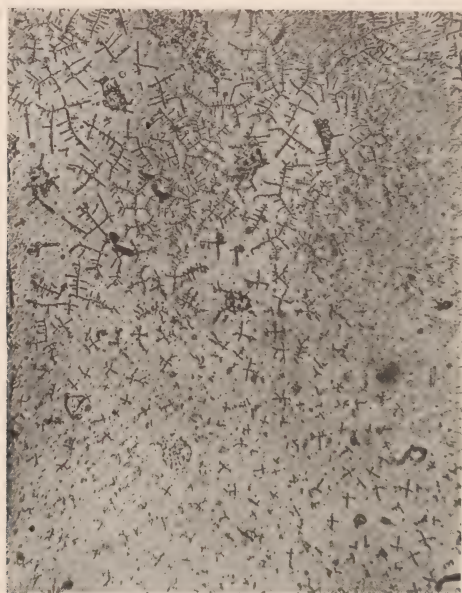
Aluminum Sulphate Crystal Made in Water.

CASE 2.—Mr. G., age 61. Erosion is local. The teeth affected are the bicuspid and first molars, which at the cervical give the appearance of having been filed with a small round file. Saliva acid. In no instance did the crystals resemble those found in Case 1. The first specimen examined resembled Fig. 2, in Dr. Kirk's article, p. 517, *Items*. All other specimens differed from the first, but resembled each other. The crystals were clear and well defined, small and circular.

We should add before leaving this case that since we began this work the centrals and laterals are affected, and the case which we classed one year ago as local erosion is now developing into general

erosion. There is no change in the character of the crystals, however.

CASE 3.—Miss L., age 17. Erosion general. Saliva acid. A number of specimens were obtained and examined, all of which showed crystals resembling Case 1. It is interesting to know that



Taken from a Non-Erosin Case, in Which a General Intestinal Disturbance Was Present.

this young lady has been suffering from irregular menstruation. For the past six months, however, she has been enjoying better health and there appears to be a marked benefit in the condition of her teeth.

CASE 4.—Mrs. C., age 45. Erosion local. Saliva acid. Teeth affected—cervical of centrals and laterals. The erosion resembles Case 2, both in appearance of the teeth and the character of crystals shown under lens.

Before learning that Case 2 was developing into general erosion, and finding that the two general erosion cases resembled each other in the character of crystals found and differed from the two cases of local erosion, which cases resembled each other, we were naturally

led to believe that there was a constant difference between the crystals found in general and local erosion cases. But the fact that Case 2 is now generally affected, yet the crystals differ from other general cases; and the further fact that Dr. Hinkins' saliva, whose case, as yet, is purely local—confined to one tooth—shows crystals



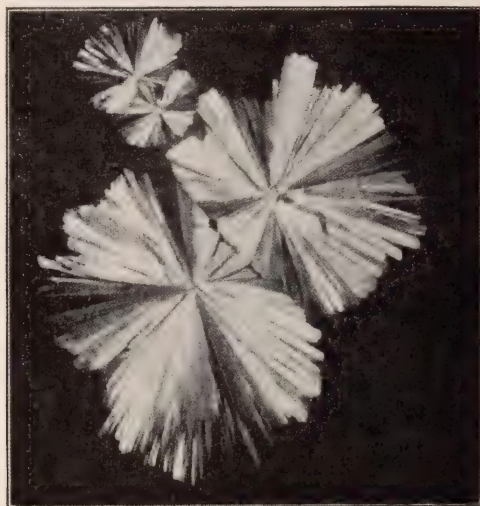
Crystal from Third Case of Erosin. The Only Forms Present.

resembling the general erosion cases, has rather upset our former conclusion, and has caused us to believe that a polariscopic examination of saliva is of little value in determining definitely the cause of this disorder.

We feel safe in saying that the life of a membrane has something to do with the formation of crystals. By this we mean that salts which osmose through a live membrane crystallize differently than when they are dialyzed through a dead membrane.

We can also say that our experiments and observations have led us to believe that erosion is the result of a disturbed condition of the epithelial cells in certain localized areas of the gum tissue.

Just what produces this disturbed condition of the cells, we, as yet, have not determined. There have been many hypotheses advanced, some of them reasonable and as if under certain circumstances they might be one of the factors entering into the causation of this very obscure affection. Michaels, of France, and Kirk, of the United States, both seem to have taken up a line of micro-chemical analysis of the saliva, and



Magnesium Lactophosphate, Made by Action of Lactic Acid on Pure Magnesium Phosphate.

Fig. 9. Kirk's.

apparently found good reasons for stating that the crystalline forms found in saliva gave reasons for this destructive process of tooth substance; and practically demonstrated to their own satisfaction that lactic acid must be the solvent agent of the tooth structure. Dr. Kirk says in *Items of Interest*, page 516, July number, 1902, that lactic acid is doubtless the solvent agent in cases of general erosion and that acid sodium phosphate or acid calcium phosphate is doubtless the cause of local erosion.

On close examination and a comparative study the committee was at once confused as to how it would determine which of these solvents would be the cause of the destruction of tooth substance.

As has just been stated, we were unable to establish any crystalline forms in or out of saliva that resembled those of Dr. Kirk's with a very few exceptions, such, for instance, as aluminum sulphate and some of the ammonium compounds; and after experimenting with two or three of the inorganic salts we were of the opinion that ammonia or derivatives might have something to do with the formation of crystals like those shown by Dr. Kirk, for many of the compounds of ammonia have that sheath-like appearance that was so manifest in his cuts.



Calcium Lactate, Made by Action of Lactic Acid Upon Pure Calcium Carbonate.

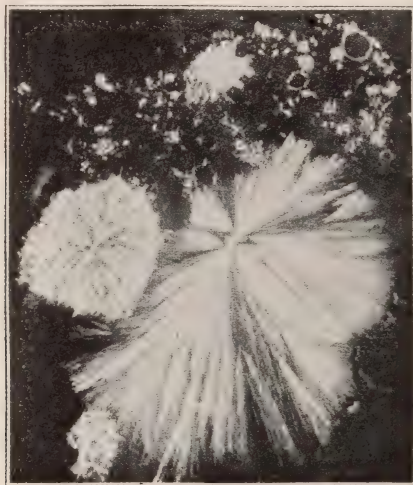
Fig. 6. From Kirk's.

On a close examination of the literature on the subject of the crystalline formation and its relation to chemical reactions, we have been unable to find in a single instance where a chemist would rely solely on the microscope for the determination of a combination of unknown chemical agents. The committee were unable to find in saliva of a number of individuals, both entirely free from erosion and those having erosion, any crystalline forms that resembled those of Dr. Kirk's, neither were we able to produce them artificially in the way he did, therefore it was necessary to arrive at one conclusion and that was, that it is quite impossible to say that such a means of investigation is likely to help very much in the elucidation of this problem.

There is a certain characteristic form of crystals that seems to

appear in the saliva of a great number of individuals, in fact, all saliva examined with a micro-polariscope showed without any exceptions a certain form of crystals that does not appear in the urine or in the serum of the blood, and these crystals changed their characteristics when they were osmosed through dead animal membrane.

Crystallography seems to be, according to some authorities, classed in certain systems of crystalline formation, to what system



Crystallization of Salts from Dialysate of Saliva from Erosin Case, Showing Two Typical Forms.

Fig. 3. From Kirk's.

of formation we are not able at the present time to state, and in fact we question if they have ever been reproduced by any chemical combination of organic or inorganic agents; they are solely characteristic of the saliva and appear in the saliva when acid or alkali, normal or abnormal mucous membrane, mouths free from decay, and those having carious teeth.

A long series of investigation of the crystalline formation of many of the inorganic salts and their combination has been carried out by E. M. Chamot, of Cornell University, and published in the *Journal of Applied Microscopy*. One or two of his slides will be thrown on the screen, which will show, as well as many other slides,

that crystals of a combination of substances are not always constant in their characteristic formation, therefore, it is easy to see why it is impossible to say that the presence of a particular kind of crystal will at all times indicate what is going on in the body.

Hardy in his investigations conclusively showed that the inorganic salts were soluble in colloidal substances in variable quantities, and that temperature, quantities of moisture present, dry or moist atmosphere, all had a wonderful influence on the solubility and crystalline formation of the various combinations of inorganic salts. When we take into consideration that the variation of the quantity of the salts of the saliva is many times due to the variation of mucus and water in the saliva, it will readily be understood how difficult it is to identify a crystal that occasionally appears in the saliva as indicative of any special form of disease of the teeth, or any other part of the body.

The committee had slides from the mouths of persons suffering with acute bilious attacks, and the crystals in the saliva had no special appearance differing from those observed in the same individual in a perfect state of health. Evidently some members of the profession began to look upon saliva as indicative of certain functional disturbances as that of the urine, but as a matter of fact saliva is a physiological solution, carrying with it certain substances for digestive purposes and can not under ordinary circumstances carry with it the waste products of the body, and because certain crystalline formations as those observed in the urine indicates certain metabolic disturbance of the body, it has evidently led some observers to consider this, from a micro-chemical standpoint, a field rich in research.

There seems to be one thing that is pretty definite and that is, that the crystals found in the saliva will have very little, if any, bearing on certain functional disturbances of the mucous membrane of the oral cavity, or the body function, unless there is a great disturbance in the metabolism of the body, which might under certain forced functional activities throw some of the waste products in the body out by way of the saliva.

There is one slide in which tyrosin crystals is shown that was taken from the saliva of an individual suffering with chronic Bright's disease. These crystals were obtained from the saliva by taking 25

cc. of the saliva and reducing it by certain chemical manipulation to where the crystals of tyrosin would appear.

Variously distributed through the literature there is to be found mention made of cholesterine, lecithin and leucin, but there is no mention made in the literature where they were identified solely by microscopic analysis. We have had made several slides from various sources, showing many characteristic resemblances to those of Dr. Kirk's, and we question whether there is anyone who would attempt to say positively whether these crystals were calcium lactophosphate, or crystals obtained entirely from other agents.

There is no question that stereo-chemistry is of great value in many respects, and so far as the chemical analysis is concerned the polariscope is and has been a valuable adjunct to certain chemical investigations, and especially to those pertaining to fermentation. If it is an organic acid that produces the condition known as erosion (and it is the committee's belief at the present time that an organic acid is a factor in the process) the polariscope may help to elucidate the problem, but it will have to be studied entirely from another standpoint. There is at the present time a number of isomers of lactic acid, and there is one thing that stereo-chemistry teaches, that all optically active organic substance contains in the molecule an extra carbon atom which influences the rotation of light either to the right or left (dextro-rotary and levo-rotary), and upon these two physical combining powers of the atom of the molecule depends to a large extent upon just what influence lactic acid has upon tooth structure, a subject that has never been touched upon with reference to tooth decay as produced by the influence of bacteria or that of erosion. If a calcium lacto-phosphate crystal should be found in the saliva, as stated by Dr. Kirk, it would differ very materially in its rotary power from the one made by the action of lactic acid on tooth substance; for it has been observed that the rotating power of the anhydrous lactic acid, and sarco-lactic acid, has very different power of action with reference to organic and inorganic substances.

According to the observations of the committee there is no question that acid of some kind or other is present in this condition known as erosion. Assuming that this is true, from what source do we obtain our acid condition and what kind of an acid would

it most likely be? One case independent of the committee's work: A gentleman suffering from certain nervous tendencies, with slight appearance of erosion, and who is an expert physiological chemist, found that his saliva contained lactic acid but we have been unable to go to work systematically in this particular case to determine the rotary power of this lactic acid in his saliva.

The future investigations will, we venture to say, show the reasons why in one instance we have erosion or tooth decay, and in another instance where all the appearance of the mucous membrane is normal and where the bacteriological findings are practically the same in mouths where there is no decay and those where decay is progressing rapidly will depend upon two conditions. First, will be the electrolytic processes going on in the saliva, producing certain physiological changes in bacteria, and the other will be the diverted functional activity of certain epithelial cells, producing certain isomers of sarco-lactic acid, which according to some observations will produce or will not produce, as the case may be, the gradual wasting away of tooth substance. Upon these two hypotheses must, in our opinion, rest the problems to be solved, and we only wish that the Chicago Dental Society could place this or some other committee in a position where it could prosecute for five years researches in this line, which would result in some startling facts relative to certain lesions in the oral cavity.

CHRONIC ALVEOLAR ABSCESS.*

BY ELGIN MAWHINNEY, D. D. S., CHICAGO, ILL.

Mr. President, Ladies and Gentlemen of the Chicago Dental Society:

It is my desire to direct your attention to the subject of Chronic Alveolar Abscess, especially to some of the complications frequently existing in connection therewith. Those who follow me in opening the discussion are expected to go outside the limits of the paper and present additional matter as well as to discuss the ideas herein presented, to the end that a most profitable evening may be spent on this, one of the most practical subjects in all the range of dental science.

*Read before the Chicago Dental Society.

An abscess is a collection of pus within the tissues which is always preceded by a circumscribed destructive inflammation resulting in the breaking down of the tissue in a given area.

The term alveolar abscess has been arbitrarily restricted to those abscesses occurring at the apical end of teeth. These abscesses are tendency of all acute alveolar abscesses is to become chronic.

Acute alveolar abscess occurs following the death of the pulp and apical pericementitis, when the region becomes infected. The tendency of all acute alveolar abscesses is to become chronic.



A chronic alveolar abscess is one in which pus continues to form after the acute symptoms have subsided; for the most part they are not accompanied with pain.

We divide chronic alveolar abscesses into two general classes, namely, blind and discharging.

A blind abscess is one in which there is no visible outlet for the forming pus but as fast as the pus is formed it is carried away by the blood stream and lymph channels. (Fig. 1.)

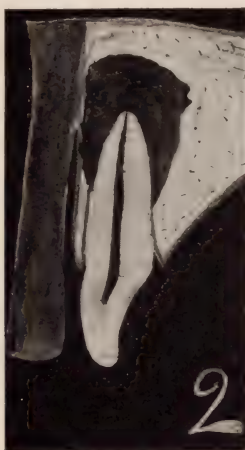
Such an abscess may remain dormant for many years but is always liable to take on active condition and present all symptoms of the acute form; especially does this frequently occur when treatment is begun. Indeed the first treatment often stirs up a veritable hornet's nest.

Most blind abscesses are slowly progressing, absorbing the bone

little by little, and the pus is usually of the laudable variety although liable to take on the septic thin serous or watery form, in which case more or less acute conditions are set up with rapid destruction of both bone and soft tissue. (Fig. 2.)

This form of abscess is among the most difficult to handle, not only on account of the danger of bringing on the acute painful conditions already alluded to, but because of the poor drainage it is difficult to completely evacuate the abscess and sterilize its contents.

The same root and bone complications frequently exist in these



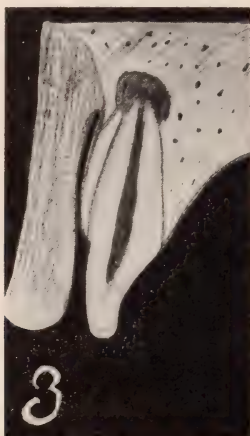
cases that more often are present in chronic discharging cases which will be considered in this paper a little later on.

The treatment of blind abscesses where the pus is of the laudable kind and where there is very little bone absorption, is usually a simple matter if care is exercised not to introduce further infectious material into the root canal and not to force any of the contents of the root canal through the apex and also the air should be excluded as much as possible, for it is free access of air that often gives new life and activity to the micro-organisms present.

When acute conditions do arise the treatment should be the same as for an acute forming abscess, which relates to the evacuation of the pus and forming gases, either by lancing and opening through the bone, or when possible, through the pulp canal, and the use of antiseptics such as oil of cloves, creosote, or Black's 1-2-3.

For the relief of pain hot foot bath, hot water to the face, dovers powder, 5 to 15 grs., and 5-30 grs. of iodide of potash to control the pus formation, and eliminative agents to carry away the poison.

In these dormant cases it has been my practice for the past four years to apply the dam, thoroughly sterilize the field of operation and then if cavity be present the caries is removed as much as possible without opening into the chamber, and if there is no cavity then drill into the dentine as far as I think safe without opening the chamber and seal in a paste of paraform, oil of cloves and trikresol,



and leave from two to four days. This paste will penetrate this thin wall through the tubuli and will disinfect well up into the root so that at the next sitting the chamber can be opened, treatment proceeded with, without danger of stirring up the conditions before alluded to.

In eighty-five recorded cases so treated not a single one took on the acute form.

The simplest form of chronic discharging alveolar abscess is where the contents are discharging through a sinus on the gum opposite the root apex as represented in Figure 3, and unless complications are present treatment is very simple and is well understood by all practitioners.

These chronic abscess cases where the discharge is around the tooth neck the pus passing down along the pericementum or between

the bone and its periosteum, are also simple to handle unless the periosteum or pericementum is largely destroyed, when considerable necroses may follow with the loss of the offending tooth. In the simple form treatment relates to making an opening through the gum and bone opposite root apex and treating as a simple chronic case and, in addition, the denuded portion of root and bone need curetting. Care in diagnoses is necessary, for these are often mistaken for pyorrhœa alveolaris cases.

In those chronic cases where the point of discharge is at some distant point from the apex of the offending tooth the treatment is also simple unless necrosis or caries of bone exist.

There are many such cases recorded where the point of discharge was either on the face under the malar eminence, in front of the ear, under the chin, or other points in the lower jaw, and a few where the discharge was on the neck or shoulder.

These are chronic cases where the burrowing pus is caught under the sheath of some muscle or entangled among its fibers and follows to the point of muscle attachment, where it makes its way to the surface.

The management of these cases relates to either extracting the offending tooth and treating the sinus or in establishing an opening on the gum opposite root apex and treating as a simple chronic case.

When the long sinuses get well it will usually be found that a bad scar is left at the former point of discharge which should receive attention.

I have found by experience that the simplest way is to dissect up the tissue from where it is artificially attached to the bone and pack it away with gauze, holding the scar tissue out a little more than level with the surrounding parts until healing occurs, which is most needed. In addition massaging the part and occasionally using the electric battery will aid in removing the scar.

The following are some of the complications, one or more of which are frequently present in all varieties of chronic alveolar abscesses and in both blind and discharging forms.

First, those cases where there is considerable absorption of bone around the root apex in which case considerable of the root end is left denuded of its membrane and the sinus does not lead from the most dependent portion of the abscess, but high up so that the over-

flow of pus is all that escapes, leaving the large abscess cavity constantly filled with pus. Figure 4 illustrates fairly accurately the conditions and also shows the folly of trying to treat such a case through the root.

Second, those cases where there exists a second abscess cavity at some distance from the root end which I have attempted to illustrate in Figure 5. This is a condition that often occurs, especially where the sinus opening and discharge point was two or even three teeth removed from the offending one.



In one or two instances I have opened into innocent teeth in searching for the offending one.

One of the most notable instances was a case where the point of discharge was at a point on the gum between the apices of the first and second bicuspid—one of which carried a crown and the other a large filling with the pulp canals cleaned and filled. The first molar was vital, the second molar carried a gold crown and the third a mesio-occlusal amalgam filling. In exploring the sinus it seemed to lead to the second bicuspid which I opened and found well filled and unoffending—then I removed the artificial crown from the first bicuspid with like results, after which I determined to make an exploring incision and after packing with a rope of cotton for a day I succeeded in passing a fine silver probe back to the third molar which proved to be the offending one and on the way I evacuated a pocket at the mesial of the second molar.



Third. Those cases where there is absorption of the offending root apex.

Sometimes these absorptions are small and involve the apical



opening, making a funnel shaped cavity around the normal opening which is very difficult to fill. Figure 6 illustrates the idea.

Fourth. Those cases where the apical opening has been closed by excementosis or other hard foreign matter which makes treatment through the canal impossible without opening the apex, which, in small crooked roots, is a practical impossibility.

Fifth. Those cases where there exists deposits of serumal calculus on the root apex. Figure 7 is drawn from a case of an offending first lower bicuspid root which was treated and root canal filled by a competent dentist and when the discharge recurred the root was extracted which as you see is completely covered with black tartar.

In all of these cases there is more or less absorption of bone around the root apex which can readily be detected by exploring



through the sinus or by the amount of discharge coming through the root canal upon opening it up.

The nature of the absorption can, to some extent, be determined by the nature of the discharge. If it is thin, watery, yellowish, with little granules of bone mixed in, you can be pretty certain that caries of bone exists. If thick, rich pus, simple absorption. If it is yellow streaked with blood, no granules, you can count on a roughened root end which should a little later be confirmed by exploring through the external opening.

I always proceed in the management of these cases exactly as I would for any chronic abscess:

Open up the canals, drain, dry, sterilize, deodorize the dentine, then if there be a fistulous opening, I wash through with bicarbonate of soda water followed by 95 per cent carbolic, or 50 per cent phenol-sulphonic acid, using the latter if I am certain of considerable bone absorption.

If it has been a bad pus case I next seal in 10 per cent chinosol for a week, if it is not such a case, but instead thin ichorous fluid present, I use the paraform paste or creastoe and iodine well up to the apex.

Where iodine is used care must be observed not to use excess, nor to leave it in the crown portion of the chamber because it will discolor the tooth.

If there is no fistulous opening then I use the same treatment as outlined for blind abscesses and in addition force a little 50 per cent phenol-sulphonic through the apex into the space beyond.

When the patient returns always closely observe the conditions.

Is there any further discharge through the fistula or down into the canal? Is the pus controlled? Does hemorrhage occur down into the canal? What does the blood look like? Is it rich red, showing that new granulations are present and healing process nicely begun?

If I am favorably impressed with the progress of the case then I seal in a mixture of trikresol, oil of cloves and hydro-naphthol, and leave from two to four weeks, when I expect to fill the root canal on the second visit and especially if there is a little soreness of tooth, I seal in creasote and iodine carried well up toward the apex, absorbing excess to prevent discoloration.

I will leave this from two to four weeks when I will expect to fill the root canal.

Occasionally I treat one of these cases a third time, but rarely.

At this point I want to say that as a rule, we over-treat teeth, treat them to destruction.

I know men who have these cases running to them every other day for weeks and months.

Do you know such treatment does more harm than good?

Be thorough in the detail of your work and use proper remedies and give nature time in which to make the recovery.

If the case does not progress favorably I fill the root canal and proceed to treat from outside for the reason that I probably have one of the three conditions already described.

For the last three or four years I have been studying these cases and carefully examining teeth removed by our extracting specialists and in 85 per cent of the teeth removed because chronic abscesses

could not be cured, I found the trouble was either root roughened by absorption or deposits of calculus.

It has been my observation that most regular practitioners are either afraid or do not know how to make these explorations.

The method I follow is this:

First. I carry my index finger along the gum over the root apicies both linguallly and labially using sufficient pressure to detect any tender, soft or springy spots.

If the case be long standing and considerable amount of absorption I will usually find a spot over the apex where the bone has disappeared or has been so absorbed that only a thin plate remains which will readily spring in, showing the absorption underneath.

Next I inject a little cocaine solution into the gum over the apex and with a little experience this can be done painlessly; then with properly shaped instruments I explore every nook of that pocket as well as the end of the root.

If I am in doubt as to the conditions present I will pack with antiseptic gauze and leave twenty-four hours, when, if a little care is observed in removing the gauze, I can readily see into the pocket and know for certain what has taken place and proceed accordingly.

In cases like classes 1 and 2, as shown in figures 4 and 5, that is, where there is large bone absorption, the treatment is very simple.

If it fails to heal readily from treatment as described through the root canal which frequently occurs, I fill root canal and then make the generous opening before mentioned, next pack the pocket with cotton saturated in cocaine, being careful to so place loose cotton around the opening as to absorb any cocaine that may exude.

I leave the cotton pack in the pocket for about five minutes when I proceed to thoroughly curette the pocket scraping all rough or dead bone (rather take a little more than necessary than not enough) while scraping I flood with Cassia water, keeping it clean so I can see exactly what I am doing.

If the case should belong to the third class of cases, that is where the root end is roughened, I resect the root, cutting away all that portion that is roughened by absorption.

I do this by using the engine with a bibevel drill to make a hole through the root—see figure 8—into which I carry a fisher bur of proper size and cut either way from this hole and thus remove the

affected apex and at the same time make the end of the root round and smooth—see figure 9.

If the case should belong to the fourth class—illustrated figure 7—I proceed in exactly the same manner as class 1, and in addition I scrape off the serumal calculus and smooth up the root apex.

This completes the surgical part of the work.



There only remains the after treatment which is very simple and consists in packing with plain gauze saturated with 25 per cent phenol-sulphonic acid, leave for 48 hours, remove pack, wash with cassia water and pack with antiseptic gauze, preferably aristol, every third day for a couple of weeks, when the case should be well.

The important point in the treatment is to keep antiseptic and compel healing from the bottom, keeping sinus open until pocket is quite nearly filled in.

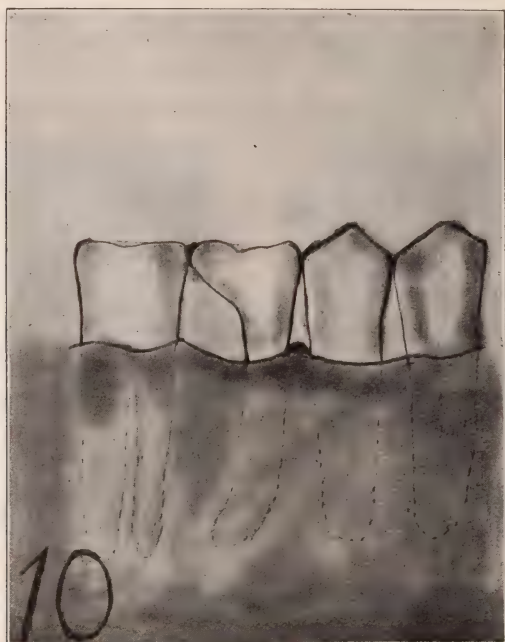
Of course each treatment will require less and less gauze and at no time after the operation should there be pus present; if there is, then you have not thoroughly used your curette.

In molar teeth it sometimes happens that one root will be badly affected, when I amputate the offending root at the bifurcation being careful to so shape that surface as to afford easy cleansing. See figure 10.

I know that many of you will think that this method of treatment severe.

In treating several hundred of these cases I have only used a general anesthetic twice.

To those that have not tried this method I ask them to try it and see if it does not prove helpful and a tooth saver. I recommend it



most cordially over the old method of treating through root canal for months and then losing the tooth in the end.

PRACTICAL THERAPEUTICS.

BY J. P. BUCKLEY, PH. G., D. D. S., CHICAGO.

BLEACHING TEETH.

In discussing the bleaching of teeth in this short article, it is not my intention to enter into the chemistry involved in the discoloration problem. I desire, however, to repeat that which I have tried to emphasize in this series of articles that in treating any pulpless tooth one of the factors to be accomplished is to *preserve or restore* the color of the tooth structure.

There are three principal sources of the discoloration of teeth,

viz., pulp decomposition, remedial agents and metallic fillings. The greatest source is that of pulp decomposition. Many teeth containing putrescent pulps are discolored before the patient presents for treatment. In those cases where the color is not lost the putrescent condition can be corrected and the color preserved by the *rational method* outlined in a previous article.

When a case presents for bleaching there are three pertinent questions suggesting themselves. 1st. What has caused the discoloration? 2d. Can the tooth be successfully bleached? 3d. What method should we employ to restore the color?

The general cause of the discoloration can usually be determined from the history of the case as related by the patient. Whether or not the tooth can be successfully bleached depends largely upon the cause of the discoloration and the condition of the tooth structure. In my practice the teeth which I attempt to bleach are those that have a good bulk of dentine and which dentine, if restored to its original color can be protected by the remaining enamel and some filling material, preferably porcelain. I desire here to emphasize the fact that it is folly to expect a tooth to remain bleached unless the dentine is properly *protected*.

Having ascertained the cause of the discoloration and believing that the condition of the tooth structure justifies us in attempting to bleach the tooth, we come to a very important question: What method shall we employ for the purpose of restoring the color? It is the *methods* of bleaching in which I presume my readers are the most interested, therefore this article will be largely a consideration of this phase of the subject.

All of the methods employed in bleaching teeth involve more or less chemistry. From a chemical viewpoint there are two general methods of bleaching teeth—*oxidation* and *reduction*.

The first general method is of two kinds also—*direct* and *indirect*.

I.—Oxidation Method.

1. Direct.—By direct oxidation is meant the use of any agent or agents from which oxygen can be directly obtained. Such as (a) sodium dioxide (Na_2O_2). (b) 25 per cent etherial solution of hydrogen dioxide (H_2O_2). (c) aluminum chloride (Al_2Cl_6) and a 3 per cent aqueous solution of hydrogen dioxide.

2. Indirect.—By this method is meant the use of any agent

or agents by which oxygen can be obtained indirectly. Such agents are employed as will liberate nascent chlorine (Cl), a chemically active gas which in the presence of moisture seizes upon a molecule of water (H_2O), abstracts the hydrogen (H), forming hydrochloric acid (HCl), and liberates the oxygen in the nascent condition— $H_2O + 2Cl = 2HCl + O$.

Some of the agents used for this purpose are: (a) Aluminum chloride and Labarraque's solution (Harlan). (b) Chlorinated lime and acetic acid (Truman). (c) Powdered alum ($Al_2K_2(SO_4)_4$) and Labarraque's solution.

In view of the fact that all of the agents used in the indirect method of bleaching depends upon the generation of oxygen for their efficiency, it can readily be understood that the direct methods are far more satisfactory. The fact also that HCl is a constant by-product in the indirect method, thereby creating an acid medium, adds to the objectionable features of this method, for manufacturers have recognized for years that better results can be obtained in bleaching feathers, wool, ivory, etc., when the bleaching process was carried on in an alkaline medium. This is likewise true in bleaching teeth. Believing then that the direct method is far superior to the indirect, I shall not burden my readers by detailing the latter method.

Before calling your attention to a method which I use almost exclusively, I desire to refer briefly to the reducing method.

II. Reduction.—By a reducing method is meant the use of any agent or agents which will abstract oxygen from a compound containing it.

The agent which has been suggested is a mixture of sodium sulphite (Na_2SO_3) and boric acid (H_3BO_3). This mixture is placed within the tooth, moistened with water and hermetically sealed (Kirk). In some cases when the tooth has been discolored by remedial agents, good results are obtained by this method.

I shall now direct your attention to the detailed use of *sodium dioxide*—a direct oxidizing agent and one which, if its chemical properties are known and its dental application understood, I believe to be the only rational method of bleaching teeth thus far suggested to the profession.

Sodium dioxide is a rare chemical; not because it is difficult to manufacture, but because of the fact that in the past there has

been very little demand for it. It is a yellow powder and easily decomposed by water into caustic soda and oxygen. Much of the product procured from wholesale druggists labeled "sodium dioxide" is nothing but caustic soda. This accounts for the fact that many dentists try this method of bleaching and fail to get results. The fault is not with the method but with the powder used. In order that we might be able to ascertain the efficiency of the chemical, some years ago I devised a simple test for this purpose. In a clean dry test tube place about 1 Gm. (15 grs.) of the powder and to it add 1 or 2 cc. (15 or 30 m.) of water. If the chemical is efficient enough oxygen should be generated to kindle a glowing splinter held in the mouth of the tube. Having tested our chemical and found it to be sodium dioxide and not caustic soda, the next thing is to prepare the tooth. It is presumed that the case has been treated and the root filled with gutta percha. The rubber dam should be adjusted if possible without the use of the steel clamp. The ligature should be wrapped twice around each tooth included in the dam, which should be at least two teeth on either side of the one to be bleached. The lower third of the root filling should now be removed with a good sized round bur—it being necessary for permanent results to bleach the tooth rootwise as far as possible. We are now ready to apply our bleaching agent. In using Na_2O_2 the best results can be obtained by placing the dry powder in the cavity. With a platinum broach or pointed glass instrument work the powder well up into the canal from which the filling has been removed. In some cases it is rather difficult to place the powder in the cavity. To overcome this difficulty a platinum matrix can be placed between the discolored and adjacent tooth, letting it extend above or below the cutting edge, as the case may be, when white gutta percha can be warmed and pressed against the lingual surfaces of the teeth included in the dam. This forms a pocket into which the powder can easily be placed, using a little gold or platinum spoon. Recently I have been making a paste of the powder and chloroform, in which it is insoluble, quickly packing the paste in the cavity, evaporating the chloroform, leaving the dry powder where it is desired. Distilled water is now dropped upon the powder, causing a lively effervescence. It is my opinion that the ultimate success depends quite as much upon the *mechanical* removal of the coloring matter as upon the

chemical destruction of it; therefore the tooth must be thoroughly washed after each application of the powder. Warm distilled water should be used in a strong syringe, letting a moist sponge absorb the water. The cavity is now dried and the process, if necessary, repeated. Usually two or three applications are sufficient. When satisfactorily bleached a paste of precipitated calcium phosphate and distilled water is forced up into the root and burnished against all exposed dentine. This is thoroughly dried, the excess removed and a light colored cement used to form a base for the final filling which should be inserted before the rubber dam is removed.

In writing this series of articles I have endeavored to make them *practical* rather than too scientific. I have appreciated the many letters received from my readers as well as the many courtesies extended by the editor and publishers of the DENTAL REVIEW, and desire to take this means of thanking all for the interest manifested. It is with some regret that I am forced to announce that on account of lack of time this article will conclude the series of Practical Therapeutics.

[The editor regrets that Dr. Buckley finds it impossible to continue this series at this time. He hopes, however, that the lively interest taken by our readers may prove an incentive for Dr. Buckley to take up the work again at a later date, and carry it to a fuller fruition. The articles have proved a great source of satisfaction to the editor as well as to the readers, and their continuance will be heartily welcomed.]

SOME PATHOLOGICAL PHASES OF ALVEOLAR ABSCESSSES.*

BY GEORGE W. COOK, B. S., D. D. S., CHICAGO, ILL.

When vascular tissue becomes inhabited with bacteria, that are active, there are always two processes that make themselves manifest if viewed by the microscope. There is either cellular degeneration or cellular regeneration. The regenerative processes which occur in close proximity to an infected area, must necessarily depend upon a number of phenomena that are characterized in living tissue;

* Read before the Odontological Society of Chicago.

first, the functional activity of the cells themselves, and, second, the inherited or acquired immunity of that particular tissue to a certain micro-organism. Degeneration may be the result of two possible factors. The first and the most important one of these is caused by the species and virulency of the organism present. The second factor is the predisposition of the tissues to undergo retrogressive changes in the presence of certain toxic agents.

The term "infection" is looked upon as meaning the successful invasion of micro-organism to endure the defensive mechanism of the tissue. This must depend upon the virulency of the micro-organism or the toxicity of its products, and the amount of injury the tissue has received at the time of microbial invasion. As has already been said, the tissues are normally of a reparative nature, but sometimes may be inclined to degenerate.

Up to the present time there seems not to have been found a specific bacteria that produces the phenomenon usually designated as inflammation and suppuration. However, there are a number of bacteria, either single or together, that produce these various phenomena that are sometimes called specific pyogenic germs. These organisms are usually looked upon as those that are constantly present on the surface of the body or in close contact with the external openings of the body, and under most all circumstances when the continuity of the tissue is interfered with infection by the specific germ invariably takes place. The reactivity of the tissue is determined by the virulency of the bacteria at the time it enters the tissue.

At the present time it is quite difficult to give a brief and comprehensive classification of these micro-organisms, especially those that take part in the disorganization of the functional activity of protoplasmia as represented in the multicellular form of animal life. In some instances we recognize that bacteria bear only a casual relation to some disease processes, while in other instances bacteria might be considered as the true and only cause of the disease. The question would then naturally arise: How do organisms act upon tissue substances? In such well defined and systemic diseases as anthrax, typhoid fever and cholera, it is apparent that the specific toxins are taken into the general circulation and by this means influence every part of the body in a detrimental way. While in the local infections the first degenerative action of the poison is confined in a particular

locality where the infection is first established. The tissue immediately begins a defensive action against the organism that carries with it a poisonous product that is capable of interfering with the life processes of the protoplasmia of the cell. When these poisonous bacterial products are permitted to penetrate into the tissues they may be in such small quantities and become so dilute, in combining with a serious substance that surrounds the protoplasmia of the cells of the body, that they may play no very deleterious effect on the protoplasmia of the tissue cells.

Mild irritation sometimes acts as a cell stimulus, in fact, it may be said that in nearly all instances where irritation takes place in the tissues, there is evidence that proliferation of the cells takes place more rapidly than it does under normal circumstances. Virchow was the first to point out these karyonkinetic figures in the nucleus of the cell in certain inflamed tissue, and at that time this author considered that the increased cellular division was due to hyper-nutrition; but Cohnheim made further observations and concluded that the cells transmigrated from the blood vessels into the tissue and that the changes in the tissue cells was really a secondary phenomenon. Virchow's idea originally was that the increased number of cells was due to indirect cell division, while as a matter of fact the first and most important change in tissue, where a toxic or a mechanical agent has formed a habitat, the leucocytes are at once migrated through the walls of the arterioles and establish themselves in great number in the vicinity of the poisonous agent, and really instead of there being a hyper-nutrition there is a mal-nutrition, which at once manifests itself by there being established a degeneration of the normal elements of tissue substance. When a sufficient number of leucocytes have gathered around the irritating agent, there is to be found a definite and a more or less circumscribed area in which degeneration of the infected tissue takes place. As has just been said, the rapidity of the number of leucocytes that may gather will depend upon the kind of irritation present, for it is a proven fact that no agent, so far as we know, has the chemotactic properties of leucocytes as does bacteria and their cellular products. When inflammation is fully established, where its onset is brief in duration and destructive in character, it is usually designated as acute inflammation. And where the tissue changes are character-

ized by a progressive disturbance in the tissue elements and show no tendency to recover, this is ordinarily designated as chronic inflammation. There is a process, however, that is distinctly indefinable and not belonging to either of the above named processes, and is usually spoken of as subacute inflammation.

If any of these inflammatory processes make their appearance in the connective tissue, which is the frame-work or supporting substance of the tissue elements, it is termed interstitial inflammation, while if the tissue changes are first established in the essential functional cells of an organ or tissue it is classed parenchymatous inflammation; and with our present histological knowledge of the peridental membrane, we must necessarily regard that the first tissue elements that are disturbed in this tissue is the parenchyma cells.

When certain infective agents, like bacteria, have entered the tissue by way of the apical opening of the root of the tooth, the kind of tissue changes that take place in this particular locality will depend upon the infective character of the organism that enters the tissue, as well as the kind of physiological processes that the tissue has been called upon to perform previous to the entrance of the organism. When degeneration of the pulp tissue is the result of a putrefactive micro-organism it has, under ordinary circumstances, brought about a number of chemical changes, resulting in a number of intermediate products, which in themselves, from their very chemical nature, exert more or less influence on both the interstitial and parenchymatous cells of the tissue surrounding the tooth; and long before the bacterial cells have entered the tissue they have prepared either a susceptibility for a display of their immediate action or the tissue has formed a bacterial lysin in sufficient quantities to destroy a large number of bacteria that may enter. If the entrance of the bacteria is only gradual the bacterial lysin has an opportunity of displaying its action. But if a larger number of bacteria than can be destroyed at once are thrust into the field, there is immediately established all the characteristic phenomena of acute inflammation, which, as we have previously said, is characterized by the accumulation of a large number of leucocytes. This is followed by degenerative changes in the connective tissue elements, which is microscopically observed as round cell infiltration, cellular exudation, purulent exudation and suppuration.

In the first instance, as has previously been said, we have the transmigration of leucocytes, and their number may be many or few, depending somewhat upon the virulency of the organism producing the irritation. If they accumulate in large numbers and have fully established a phagocytic tendency, they will cause liquefaction of the tissue with complete cellular death (necrosis).

The corpuscular exudates are characterized principally by polymorphonuclear leucocytes, and when these tissues are present in large numbers they have a distinctive amoeboid movement, and usually escape through the vessel walls with the greatest of ease.

If it were possible to always interpret the phenomena of inflammation as manifested in tissue, like that found around the apical end of the root of a tooth, in general it would be said that the inflammation was conservative in its tendencies, benign in disposition and usually circumscribed because of the carefully protective mechanism of the tissue elements in that locality. The stage of inflammation usually designated as hyperemia always exerts a diluting and solvent action on the irritating substance, with a tendency to remove and scatter the poisonous products, the leucocytes have established a phagocytic property which enables them to destroy the micro-organisms present, and dilute their products in a way to render them more or less harmless. Should the above means fail to rid the tissue of the irritating agent, a further invasion into the surrounding tissue takes place. Degeneration of the surrounding tissue of an infected area follows in the direction of least resistance, tending to physically and chemically establish an external opening whereby the products that have been formed by the degeneration of tissue may be able to empty themselves externally.

When destructive degeneration of tissue is established at the apical end of the root of the tooth, as has been previously stated, the severity of the infection will necessarily depend upon the virulency of the organisms present. In bacteriological cultivation, inoculation and microscopic examinations, of both the tissue and organism, I have found a great variety of different organisms present and tissue changes. From a histo-pathological standpoint, where the bacillus of pulp gangrene is present, there is shown a number of tissue changes that are most always absent where the strictly speaking pyogenic germs are present.

The decomposition of the tooth pulp by the actions of bacteria and the formation of an abscess is most commonly the result of infection with bacillus of pulp gangrene, so named by Archovy. This organism exists most commonly in the oral cavity as a harmless bacteria, but takes on a saprophytic action when brought in contact with tissue where the life of the protoplasmia has been destroyed; it will then pass to the end of the root and after remaining there for some little time it takes upon itself sufficient virulent properties to produce degeneration of the tissue surrounding the apical end of the root, followed by pus formation. This organism, from a biological standpoint, acts very much as does the bacillus proteus vulgaris, an organism which was first described by Hauser as a saprophyte; and is widely distributed in nature and occasionally presents itself in various infections and pyogenic lesions.

The bacillus that causes pulp degeneration in so many instances will also, as has just been stated, produce acute inflammatory lesions, rapidly followed by a formation of pus, but in the majority of instances this organism produces only a mild and continuous action and there is established a chronic form of inflammation. In some instances the pathology of chronic inflammation is chiefly characterized by fibrosis, which is the formation of a fibro-connective tissue formation in which all the essential phenomena of acute inflammation, such as hyperemia, edema, cellular infiltration and suppuration are present; and a single hyperplasmia of connective tissue may exist for months and even years before it becomes of sufficient importance to make itself symptomatically felt. In such tissue degeneration there appears only the large lymphocytes and certain forms of polymorphonuclear leucocytes. The lymphocytes are larger in size and possess cytoplasmia free of granules; and from a careful microscopic study of the tissue one would suppose that the majority of these were derived from the fixed and some perhaps from the wandering connective tissue cells. Their phagocytic activity is said to be of importance in combating the irritating agent, and if it is the bacillus of pulp gangrene they will circumscribe its action to a small area at the end of the root; and the tissue surrounding the area becomes somewhat immunized to the further action of bacteria, unless a very pathogenic germ should be introduced or some chemical agent that would increase the oxygen in the

vicinity of the tissue degeneration. It has been observed that many of these organisms, and especially the one above named, takes on a decided facultative anaerobic action, but will, when the quantity of oxygen is increased, establish itself as aerobic and somewhat more pathogenic. As an illustration: If a mild abscessed tooth be opened into and peroxide be introduced there will be established an acute inflammation, with all of its characteristic symptomatic conditions, with but little destructive effect upon the bacteria present.

In these so-called chronic alveolar abscesses, where the bacteria themselves have but little effect on the surrounding tissue and the tissue has increased its powers of resistance, the bacteria will pass into what is usually designated as the resting stage; and the conditions will remain at almost a stand-still until some treatment with a mild chemical irritant whereby cell proliferation is established to such an extent as to cause the death of the bacteria, but if a chemical substance is brought in direct contact with the tissue and the agent has a powerful irritating effect, it will disturb the protoplasmic function of the cells in such a way as to increase the destructive changes in the tissue by the bacteria present. While on the other hand, if the agent is a mild stimulus it will increase the functional activity of the tissue cells which will decrease the regenerative processes of bacteria, and in this way will bring about the re-establishment of the healthy functional activity of the tissue in a way that bacteria, unless of a very virulent character, will fail to produce a diseased process in the tissue for at least a considerable period of time.

Up to the present time with all of the various agents that are suggested as antiseptics, we have none that we can say is truly a biological or a specific disinfecting agent. As I have repeatedly stated on previous occasions, all agents that cause the death of bacteria will produce destructive changes in the protoplasmia in the higher forms of cellular life more quickly than it will produce death in bacteria.

Therefore, in such inflammatory processes as manifest themselves in the formation of tissue changes resulting in abscesses at the end of roots of teeth, there is greater danger of causing more pathological changes in tissue by the methods that are in vogue for the treatment of teeth than the majority of us can conceive of at the present time.

There are several phases of inflammatory processes which we have referred to that are considered typical of the reaction of living tissue to various forms and degrees of irritating agents. The various changes they produce in the tissue are varied in character as well as degree, and most all of them can be found in the pathological changes which take place in the inflammatory processes of various tissues. The three kinds of changes are all of great importance when studying the pathology of local infectious processes. The first and most important of these is degeneration or necrosis; second, those involving the circulation, as well as the alteration and distribution of the fluids and cellular elements of the blood (exudative changes); and the third, the regenerative or reparative changes.

While it is true that one of the above inflammatory conditions may exist in the absence of both of the others, still at the same time they are so closely associated with each other that it seems that one phase of inflammation must to some extent depend upon the other. But all the various phases of inflammation terminating in suppuration must depend upon the nature and extent of the injury, the inherited and acquired predisposition to the action of foreign agents with the virulent qualities of the micro-organism inhabiting the tissue. The bacillus of pulp gangrene produces many changes in the tissue that differs widely under ordinary circumstances in its histological pathology from the inflammatory processes produced by the staphylococcus and streptococcus forms, which are looked upon as strictly scientific bacteria of inflammation and suppuration. The inoculations of animals with this organism in normal tissue produce no pathological changes, but when grown in the ordinary beef bouillon and filtered out, and about 5 c.c. of the bacterial free bouillon is injected into the tissue, the inoculation is followed by suppuration in from twenty-four to forty-eight hours; and the pathological changes in the tissue, after the pus has been evacuated, resembles somewhat the tissue changes that are produced by the bacillus of tuberculosis.

After a close study of the organism we see that it becomes a saprophyte when introduced into tissue, like that of the pulp undergoing degeneration. That it produces some intermediate products which when absorbed by the tissue surrounding the tooth is beyond doubt. When the organism passes down through the tooth and into

the vascular tissue it produces either acute, subacute or chronic inflammation, which results in destructive changes of the tissue sufficient to produce death; resulting in the formation of a cavity. If the stage is an acute inflammation it results in considerable swelling, followed by an escape of pus from the alveolar pocket. While if the virulency of the germ is not great or the formation of an intermediate product, in the process of decomposing the pulp is not extensive, there will only be a mild form of inflammation with very little activity of the bacteria themselves, and with but little destructive changes in the tissue. This condition may remain for months and even years without producing any of the symptomatic conditions that characterize acute or subacute inflammation, but if a volatile agent is sealed up in the tooth, like any of the essential oils or formalin in its various dilutions, there will be at once established an acute inflammation, followed by suppuration; resulting in the formation of an abscess cavity varying in size in accordance with the virulent activity of the organism and the reactivity of the tissue.

PROCEEDINGS OF SOCIETIES.

CHICAGO DENTAL SOCIETY.

Regular monthly meeting held in Booth hall, November 1, 1904, with the president, Dr. Thomas L. Gilmer, in the chair.

Report of the committee on Investigations as to the Cause of Chemical Erosions of the Teeth.

DISCUSSION.

DR. G. V. BLACK:

Mr. President and Gentlemen: I wish to compliment the committee on the work they have done and the progress they have made in so short a time with so difficult a subject. After years of study we have less light on it than on any other subject to which the same amount of time has been given. The character of the studies undertaken carries us into a field of unusual difficulty.

The physics of crystals is in itself a great subject, and the physics of the polarization of light is another, neither of which is as yet well worked out and we may expect when we drop into this field of work that we will meet with difficulties. Conditions will

loom up which we are unable to analyze, unable to fathom. I have had quite a little to do with the study of crystals; some of it recently, much of it a number of years ago. I have also had something to do with studies of erosion, but I do not know anything about its causation after all the work I have done. It is true, I can produce every appearance of erosion by acid solutions in rapid motion, conditions that are utterly impossible in the mouth—solutions running at the rate of 140 feet per minute continually, for weeks at a time, is impossible in the mouth. That was my conclusion then, and it is my conclusion now.

As to the study of crystallization—I have done quite a little of that, getting some varieties that this committee seems not to have obtained. The subcoverglass crystallization is another method with which we get entirely different results, yet with the same substances and are able to study crystals in exceedingly thin sheets, and any substances not belonging there are more easily discovered. This study is very complex. We find certain crystals normally from saliva that are characteristic and when we find something else, something different, something that does not belong there, accompanying certain conditions, then we are in a position to draw conclusions. It is only by finding something that is peculiar to some condition that we can learn anything.

For instance, Dr. Kirk's target crystal is something definite. This is a plain crystal found in conditions accompanying loss of muscular power which is normal except that it looks as though it had been shot at with a shotgun. That is something definite.

So far as the crystals described by Dr. Kirk are concerned, I have found them in persons who did not have erosion as well as those who did. I have visited Dr. Kirk and looked over the work with him in his laboratory.

In regard to polarizers—there are polarizers and polarizers. It is exceedingly difficult to get a good instrument because the Iceland spar is scarce. Dr. Kirk has some very fine crystals. The only objection I have to his polariscope, which is purely a projecting instrument, is that his stage does not swing. Yet both crystals swing, and that, in part, makes up for the fixed stage. A pair of crystals in order to do anything like good work must shut off the light entirely when the crystals are crossed; they must be able to

throw out the deflected ray completely. That is a fair test of a polarizer.

The method of revolving the crystals is very important and I do not believe that with the ordinary microscopic apparatus we could do much without a revolving stage. I have seen a number of polarizers lately that were absolutely useless for the purpose of studying crystals.

In a recently published work Preiswerk and Bastyr conclude that erosion is caused by the trypsins; not by the trypsins of the pancreas, but by trypsins produced in fermentative processes. These trypsins act in alkaline solutions only and digest the albumens and albumenoids, while the others digest the starches and sugars. They believe that the erosion occurs in the intervals of alkalinity, and the basic substance of the dentine is dissolved by the trypsin; then the lime salts fall away leaving a smooth surface. This, it seems to me, may as well occur with the pepsinoids acting under acid conditions.

I have never tried the experiments myself, but there is one difficulty connected with this very beautiful theory, which could very likely be shown to be plausible, and that is, while the dentine has a large amount of basic substance that might be dissolved, allowing the lime salts to fall away, the enamel has almost none. That little hitch, that so many experimenters leave untouched, is a fatal one to that theory.

I like to see this work going on because somebody will strike a lead sometime, and I hope it will be some of our boys here in Chicago. Where it will be and how it will be, I have not the slightest idea.

DR. REID:

Do you not believe, as the result of your observations during the past two decades, that the cases of erosion are increasing?

DR. BLACK:

Yes; the cases coming under clinical observation are certainly increasing, but I would explain that on an entirely different hypothesis from that in your mind. I believe that people apply to the dentist much more often now than they did in the years gone by. In the first twenty years of my observation as a dentist, the cases of erosion I saw were those I accidentally met in my intercourse

with people entirely separated from my functions as a dentist. Now these cases come to us in our offices for treatment.

DR. MORRIS (Densmore, N. S. W.):

I wish to thank your society for the kindly welcome it has extended to me at this meeting, and the profession for the courtesy shown me. I have been much interested in the discussion this evening because I have seen many cases of erosion in Australia, and I would be happy if I could go back with some remedy for it, but I fear I shall be disappointed.

DR. MCGRAW (San Jose, Cal.):

I have listened with a great deal of pleasure to the report and the discussion, but I am sorry that the gentlemen did not emphasize the importance of diagnosing conditions in the mouth by the crystalline formation. I think that if the gentlemen who are taking hold of the scientific part of the profession will emphasize these facts when they are brought out so that we, who follow them, will not make a mistake and follow after false gods and hold ourselves open to ridicule, they will be doing a kindness to us. Of course, the majority of the profession is striving after the practical part of dentistry, and when any new scientific facts become known they ought to be emphasized so that others will not make a mistake, which, as I take it, judging from your committee's report, Dr. Kirk did.

It is about fifteen years ago that I had the pleasure of reading a paper before this society, and I assure you that I have enjoyed very much meeting with you again.

Regular meeting held December 6, 1904, with the president, Dr. Thomas L. Gilmer, in the chair.

DISCUSSION OF PAPER ON "CHRONIC ALVEOLAR ABSCESS," READ BY
DR. MA WHINNEY.

DR. J. P. BUCKLEY:

Ladies and Gentlemen: We are to be congratulated tonight upon having heard the subject of chronic alveolar abscess presented in such an exhaustive and practical manner. I have had some experience in treating the conditions under consideration as well

as writing upon this subject, and I find it quite as difficult to present the subject in a clear and practical manner as it is to successfully treat some of these stubborn cases. Dr. Mawhinney has certainly made his methods plain and we all know that, in his hands, satisfactory results are obtained.

For me to discuss the classification of chronic alveolar abscess and the pathology pertaining thereto would be but to reiterate what has been so well said by the essayist. Therefore I shall confine my remarks entirely to the treatment of some of the conditions to which our attention has been called.

In those cases of putrescent pulps or blind abscesses which have been dormant for a number of months, or perhaps years, the essayist very properly refers to the care to be taken in the first treatment so as not to introduce further infectious material and to avoid forcing any of the irritating gases and poisonous ptomaines through the apices of the roots, thereby setting up the train of symptoms characteristic of an incipient or acute abscess. As far as possible the air should also be excluded for the reason "that it gives new life and activity to the micro-organisms."

My method of treating these cases differs somewhat from that outlined in the paper, in that, after the dam is adjusted and the teeth which are included sterilized, especially the cavity in the affected tooth, I have no hesitancy whatever, whether the case be a putrescent pulp or a blind abscess, in opening into the pulp chamber. Indeed it is often difficult to tell which one of these conditions exists until the pulp chamber is opened; and as a somewhat different method is employed in treating each condition, I desire to know at this time which one is present.

In case of a putrescent pulp, no attempt is made to remove the contents at this sitting. The following remedy is *hermetically* sealed into the pulp-chamber on cotton, preferably with cement:

R Tricresol,
Formalini, aa f 3j

M. Sig.—As directed.

At a subsequent sitting the contents of the canals can be mechanically removed, when the remedy is again placed in each canal on cotton and hermetically sealed for at least three days, at which time the roots can be filled.

Those who prefer a remedy in the form of a paste can use the following:

R Tricresol,
Formalini, aa m ij
Calcii phosphatis ppt., q. s.
M. ft. paste.

M. Sig.—As directed.

Personally I do not like to use drugs in the form of a paste in root-canals in treating these cases, for the reason that the paste can not be as readily removed as can a remedy which has been applied in the form of a solution on cotton.

In cases of blind abscess a somewhat different procedure is followed. Usually in these cases as soon as an opening is made into the pulp-chamber the pus flows freely, in which event it is permitted to flow, pressure being made on the tissue over the apical end of the root. When as much of the pus is evacuated by this means as is possible, the canals are cleansed and the following modified formula is placed loosely in each canal on cotton and the cavity hermetically sealed:

R Tricresol, f 3 ij
Formalini, f 3 j

M. Sig.—As directed.

If there was much discharge at the first sitting, I would see the patient every day until the dressing could be removed without the pus flowing from the canal. Unless some complication is present one or two treatments will usually accomplish this, at which time I thoroughly agree with the essayist when he intimates that frequently these cases are "treated to destruction," i. e., it is possible by over-treating to retard rather than assist nature in the healing process. This dressing should remain from ten days to two weeks, when the roots can be filled, providing there is no evidence of pus and the case gives a favorable history.

I desire here to emphasize the fact that this remedy must be hermetically sealed in order to obtain the best results. I realize that this is a radical departure from the general methods of treating these conditions; and, like myself at first, some practitioners may hesitate to hermetically seal a cavity in a tooth the canals of which are filled with putrescent material. No hesitancy need

be entertained here, however, for it has been shown that the formaldehyde which is generated from this mixture will not only destroy the micro-organisms, but will chemically convert the poisonous ptomaines and irritating gases into non-irritating *liquids* and *solids*. It has been shown, too, that fats are formed as a result of the splitting up of the complex bodies found in pulp tissue; therefore, I believe that the tricresol will dispose of the fats to advantage.

Any remedy which can be hermetically sealed within the tooth has many advantages over one which can not. First, by this means the air is excluded which not only "gives new life and energy to the micro-organisms," but, in my opinion, it also plays an important role in the discoloration of teeth from pulp decomposition. One of the factors to be accomplished in treating any of these cases is to preserve or restore the color of the tooth—it is presumed, of course, that the crown is to be saved by the subsequent insertion of a filling. Another advantage in hermetically sealing the remedy is that it prevents the saliva from contaminating the medicine within the tooth and the medicine from contaminating the saliva in the patient's mouth. In the past many valuable drugs have been rejected simply on account of their disagreeable taste which the patient always experienced when the filling was punctured.

No difficulty whatever will be encountered in treating putrescent pulps by the method here given, and blind abscesses will yield nearly as readily unless some of the complications are involved, which condition has been so well illustrated by the essayist. In these complicated cases it is but folly to expect medicines applied to the root-canals to effect a cure; and here I agree with the method outlined in the paper in every particular, except in the use, within the tooth, of solutions of Chinisol and iodine. In my opinion there are so many drugs and remedies that can be used in these cases which will not discolor the tooth structure, that we are never justified in sealing in a tooth any agent which will produce this result. Solutions of Chinisol, especially if in contact with steel instruments, will badly discolor the tooth. The fact that the discoloration can be quite readily removed by the application of a bleaching agent does not, in my judgment, justify its use here. Stains of iodine are not easily removed; and while I have confidence in the ability of the essayist to place solutions of iodine in the apical end of the

roots of teeth without staining the dentine of the crown, I have had reason to lose confidence in my own ability to do so. Therefore I do not use this agent within the tooth for the purpose of stimulating the cells of a sluggish tissue at the apical end of the roots or for the supposed purpose of "rusting out" a metallic root-filling, although I use many remedies which contain iodine in the treatment of diseases of the gums and peridental membrane.

The treatment which I have been using for abscesses with a fistula is practically the same as that outlined in the paper, except I do not believe in delaying the filling of the root for from two to four weeks after the fistula has been established and well cauterized. In my practice, when this has been accomplished, carbolic acid is sealed in the canals for about three days, at which time, if the fistula is healing nicely, I proceed to fill the root. It has been my experience in those cases where the root-filling was delayed to find a weeping condition, which could have been avoided had the root been filled soon after the fistula was cauterized and before it had healed. In most of the chronic cases the fistula will heal nicely in three or four weeks after the root has been filled without any further treatment. In case it does not, some complication can be expected and surgical methods adopted.

I do not know that the mechanical process of filling the root-canals should enter into this discussion; yet our treatment will have been lost unless the roots are properly filled. Therefore I might say that extreme care should be taken in filling the roots of teeth from which chronic abscesses have been treated, for the reason that the tissue at the ends of the roots has been absorbed or broken down, the canals have been enlarged, and it is quite easy to force the root filling past the apex with the result of the so-called "lame tooth" after the absorbed area has been filled in with new tissue.

A complication to which the essayist did not directly refer and one difficult to treat is where the pus burrows through the palatal process of the superior maxillary, involving one side of the vault. The tissue overlaying the bony palate is so tough and fibrous that the pus spreads over a considerable area and often separates the periosteum from the bone, causing necrosis or caries.

In all these complicated cases where it is deemed best not to employ surgical methods, and indeed in the after treatment of many

of the surgical cases, I desire to emphasize the use of phenol sulphonic acid, which, so far as I can learn, was first advocated by Drs. MaWhinney and Cook, and which, where indicated, has given me more satisfaction than any agent I have ever used. I have found difficulty, however, in diluting the acid, and hope the essayist will explain in closing how he makes a 25 or 50 per cent solution in water without precipitating the carbolic acid.

DR. C. N. JOHNSON:

In discussing Dr. MaWhinney's most excellent paper I purpose touching on only a few points merely by way of emphasis or suggestion. In the management of blind abscesses or in opening into teeth with putrescent pulp canals we do not have so many cases of serious trouble following the initial treatment as we formerly did. This is because we recognize the fact that any disturbance of the contents of the canals with instruments tends to carry the infected matter beyond the apex with disastrous results. And yet to my mind it does not follow that we are to overlook the possibility of a reasonably thorough disinfection of the chamber and canals at this first treatment. My method of procedure is this: I first clean the carious cavity quite thoroughly and open up the pulp chamber. Immediately on entering the chamber I flood the cavity and chamber with absolute alcohol, not with the idea that the alcohol is a very effective germicide but because it is a cleanser and a good dehydrator, and prepares the way for subsequent medication better than any agent I am familiar with. Then again I am not so certain that alcohol at this stage is as devoid of power in limiting infection in a putrescent tooth as we are led by investigators to believe. A recent writer has stated that about the only effect alcohol has on micro-organisms was to intoxicate them. Even granted that this is true I have the feeling that a nest of micro-organisms properly paralysed by alcohol are more readily controlled than if left in the full possession of their faculties, and my clinical experience would seem to bear out this impression. After washing the cavity and chamber well with alcohol the surplus is evaporated with compressed air, being careful not to dry the tooth sufficiently to weaken its structure by checking it. Complete access to the chamber can then be obtained with a bur in the engine without danger of forcing any infected material into the canals.

When this is done the chamber and canals should be flooded with an antiseptic—preferably for this first treatment oil of cloves. A small loose pellet of cotton is then saturated with the medicament and laid carefully in the chamber, and the cavity sealed with gutta percha. Nothing is forced into the canal at this sitting, and if care has been exercised in the treatment there is little or no disturbance following. At the next sitting, which should be in twenty-four or forty-eight hours, the canals may be cleaned, after first dehydrating with alcohol. But even at this sitting care should be taken not to force anything beyond the apex. I am a firm believer in reaming out the orifices of canals to permit of a more thorough manipulation with broaches. There are many canals of such a peculiar shape that unless the opening from the chamber into the canal is enlarged there is little opportunity to cleanse the canal, and if the canal is not properly cleansed mechanically there is no assurance of permanent comfort to the patient. When an operator leaves any appreciable quantity of putrescent matter or debris in the canal with the idea of rendering it inert by medication he is treading on insecure ground. The best results are to be obtained only by the most painstaking manipulation followed by proper medication. In cleansing out canals it is of course dangerous to insert a drill or reamer sufficiently into a canal to cause binding, but the entrance to the canal may be reamed out without danger of breaking the drill, and good access given for a broach.

After thoroughly cleansing the canals a tent of cotton carrying an antiseptic may be passed into each canal and a pellet left to fill the chamber, thus being assured that all of the area of dentine previously subjected to infection is now under the influence of the medicament. This second dressing may be left sealed in a week, and the conditions present will indicate what the medicament shall be. In many instances where there is a susceptibility in that mouth to irritation of the peridental membrane, and where there has been a thorough cleansing of the canals, oil of cloves will answer the best purpose with the least danger of creating soreness at the apex, but where it has been impossible to accomplish a perfect mechanical cleaning and where infection has extended a long time leaving the dentine infiltrated some more powerful antiseptic is called for. This is found in one of the preparations containing formalin. Dr. W.

H. G. Logan suggested in THE DENTAL REVIEW for March, 1903, a 3 per cent solution of formaldehyde, and more recently Dr. J. P. Buckley has recommended a combination of formalin and tricrosol. We are gradually obtaining more insight into the possibilities of the various drugs and their indications in different conditions, and yet with all of this it is to my mind not so much the specific action of any particular drug as it is the man who performs the operation. I would rather place reliance on an operator who was cleanly, painstaking, and thorough, but who knew little of drugs, than on one who was versed in medicine but was slipshod and careless.

When it becomes necessary to bur out carious bone or cut off the end of a root it is usually preferable not to discuss with the patient the details of the procedure. This sounds to the average individual like a very formidable operation while as a matter of fact it is really a simple one and ordinarily, if done carefully, almost painless. It is only necessary to say to the patient that you are going to clean out the pus tract and then proceed as if it were an ordinary, every-day affair. If a few strands of cotton are wound on a broach and dipped in 95 per cent carbolic acid and this passed up the fistula and allowed to remain a few moments the bur may be carried to the apex of the root with little or no discomfort. A reassuring word just at this stage will ordinarily quiet the patient and permit of all the drilling necessary to round off the root end and remove the carious bone. It is seldom necessary if this plan is followed to pack the fistula for its enlargement in advance of the operation, and the whole thing is accomplished without unnerving the patient through apprehension.

There are many other phases of the question which might profitably be discussed but the essayist has been explicit in covering the subject and there are also others to follow in the discussion so that I do not feel like taking any more of the society's time.

DR. J. E. NYMAN:

Mr. President and Gentlemen: What I will say will not be a criticism of the paper, but rather an emphasis of some points contained in it. Dr. MaWhinney spoke of the relief of pain by the administration of potassium iodid and Dover's powder. I have not had pleasant results with these drugs because the systemic disturbance which accompanies their use is often more severe than the pain for

which they are given. But I have had remarkably good results from the use of antikamnia and codein, and although I do not like to exploit a proprietary remedy, yet my results from its use, one tablet every hour, or two to begin with, giving not more than six, have been excellent.

I have not attempted the treatment Dr. MaWhinney recommended for blind abscesses. The difficulty I would fear would be the fact that you can not always tell whether you have a dead pulp or one which is in the last stages of dissolution, a pulp which is so nearly devitalized that it is practically dead. Very frequently these cases come to us to be relieved from pain, which is caused by the pressure of the mephitic gases gathering there, and I can not understand how paraform paste can give any relief under those circumstances. We ought to open the chamber and allow these gases to escape, and I do that and nothing else, except to put in a little 1-2-3-mixture, general antiseptic measures in combination with hot strong teas in the mouth. That method gives better results than any other I have tried. Of course, when there is no pain, the abscess, if discovered, can be treated by Dr. MaWhinney's method.

Dr. MaWhinney referred to some of the complications. I recall one case, a patient who was referred to a surgeon for carcinoma of the jaw. In examining the mouth the doctor found a small fistula beside the second bicuspid, which had a bad cavity in the crown. He referred the case to me for preliminary treatment before he adopted surgical measures. After cleaning out the cavity thoroughly, I attempted to inject peroxid of hydrogen through the fistula in the gum only to have the patient grab his jaw and see peroxid and blood pass out. The carcinoma was nothing but a fistula from the tooth. Three treatments cured the case.

I recall another case where I treated a fistulous opening over the left upper central for some time. Finally I cut off the root and trimmed out the pus chamber, only to have it heal up and break out again. Then I discovered that the left lateral was in a devitalized condition and that I could force medicines through the sinus. I treated that in the same manner and it healed up but only to recur again. Then I found the left cuspid involved. There was no break in the crowns of the left cuspid and lateral; evidently the sinus was formed by a spread of the septic process until it reached

the terminal ends of these roots and destroyed the pulps at that point.

Dr. Johnson has dwelt upon the method of establishing a fistula, so that there is no need to refer to that again.

The carbolic acid treatment does nicely and opens the fistula thoroughly and also anesthetizes everything you may wish to cut away. So that there is little pain in the root after injecting carbolic acid.

I have not had any trouble with iodine discolorizing the teeth where pus is present, probably because of some reaction between the iodine and the pus, lessening the discolorizing power of the former.

As to forcing medicines through fistulas, which is almost always a desirable thing to do, it is extremely difficult to force in just enough to permeate the fistulous tract and nothing else, and not allow the excess to escape into the mouth. I trim out the opening in the crown slightly with the bur, then carefully adjust in that one of the large gutta percha cones used for root canal points, cutting it off, however, so as to leave only a truncated cone. After the medicament has been placed in the root, this little piece of gutta percha can be fitted closely into the opening in the crown, and then with large instruments that will nearly fill the cavity you can force just a minute quantity of the medicament through the root and the fistula.

Another point many seem to have overlooked in this connection, and that is, that nearly every germicide is also tissuecidal. I imagine that the antiseptics from which we get the best results are those which inhibit the growth of bacteria, and yet stimulate the tissue cells to greater activity. Under normal conditions the tissue juices are destructive to bacteria.

The doctor spoke of removing the roots from multi-rooted teeth where it was impossible to reach the abscess, and it is evident that a putrescent condition exists at or near the apex and is not discharging. I have three cases in mind. In two I removed the mesio-buccal roots of the upper first molar, and in one the bucco-distal root. The cases were crowned later; one has been in the mouth about three years, and one one year. There has been a complete restoration of tissue in the cavity left by the root extraction, and the teeth are perfectly sound in the mouth.

A great lesson may be learned from this paper, and also from the methods of the general surgeon for treating abscessed conditions elsewhere in the body. He depends upon thorough removal of the septic material rather than the treatment of the abscess. All the antiseptics he uses are used in weak solutions. They do not utterly destroy the bacteria, but they inhibit their growth and stimulate the surrounding tissues to new growth and increased activity.

DR. W. H. G. LOGAN:

We can best discuss chronic alveolar abscess at the point it comes to us—in its active stage; if the abscess is one without a fistula, if causing no pain, we do not know it is present until something starts it up; therefore I shall begin my discussion with the presentation of the patient.

The patient presents himself with an acute alveolar abscess on the lower first molar. Drilling into the tooth causes much pain, and the nicest way to relieve pain caused by pressure in drilling into a tooth is to fasten a ligature about the neck of the tooth, another about the first molar in the upper jaw; have the patient nearly close the denture; tie the ends of the two ligatures together at a proper distance so that the mouth will remain open at the distance required to work. In this way you counteract the pressure you make in drilling and it relieves the pain very nicely, at the same time leaving both hands free.

Enter the pulp chamber; dry it out and get in contact with the openings into the root canals. Dry these and place in creosote, oil of cloves, mixed with a little thymol, and dismiss the patient after administering one grain of codein sulphate and giving him another grain with instruction to take it if the pain does not abate within an hour, and to return if the pain continues after that. Otherwise the dressing is left in for forty-eight hours.

You can then go further into the canals to cleanse them because of the drugs in the chamber. Pass well toward the apex if the pain has not ceased. Why? Because the infection has spread into the tissues or the pain would have ceased. Therefore, there is little danger in passing further into the canals at this time. Of course, you will use counterirritants. If I could not make a very large opening into the pulp chamber, I would not even put gutta percha into it.

The case comes back and is treated again until it is in condition for root canal filling.

Now, assuming that the patient presents an acute alveolar abscess upon a tooth that for some reason must be removed. You remove the tooth. Many men say not to remove the tooth until the swelling has subsided. If the tooth had to be removed, I would remove it then and there. If the end of the root was absorbed, I would wash out the alveolar socket with mercuric chlorid, using half as many grains as I use ounces of water, for there is a pyogenic membrane in the socket. Then, after thoroughly sterilizing the part, I would put in a tent of gauze to prevent a clot forming. The patient returns the next day to have the gauze removed and the part further syringed with the same solution, and, in all probability, you dismiss the patient.

When there is considerable absorption and invasion of the alveolar process we have destruction of the membrane and death of cementum and denudation of the end of the root, and in this case you must carry drugs into the part. To do this, enlarge the apical opening so that you can carry the drugs well into the pus socket. Having stopped the flow of pus, you must use something to excite healthy granulations. Use a 10 per cent chlorid of zinc solution; excite a healthy inflammation after checking the septic process. It is very irritating, but we want something to break down the pyogenic membrane and get healthy granulations in the part.

When you believe that you have the part filled in with new tissue, would you fill? No. If you bring the root canal filling in contact with the new cells, a new inflammation will be set up that will result in tissue destruction. Therefore, after you have brought conditions back to the normal, wait until nature has thrown a new circulation through the part. Where pus has been present for a long time, a serumal calculus will be deposited around the end of the root, and if this continues, resorption of the root follows.

If this withstands the treatment used in the ordinary case, you must make an opening through the anterior plate, and inject something that will have a tendency to break down the calculus. Aromatic sulphuric acid, a 25 or 40 per cent solution, is the thing to carry into the parts, stimulating healthy growth. If there has been root absorption, then carry in a tent of gauze and leave it there for twenty-four hours so that you can see the exact condition of the end of the root. Cut it off, if you must; but in most cases if you

will take a bur and carry it through the alveolar plate, run around the root as much as possible, and you will not need to cut off the root. The case will get well under the treatment I have outlined.

Where a sinus is established, if you will force carbolic acid through the part, if there is no extensive lateral destruction of tissue, and immediately fill, the case will care for itself. I believe that too often we rely upon drugs instead of taking instruments and going to the end of every canal and removing the contents of that canal; sterilize the canal, replace a dressing and then subsequently fill.

DR. J. G. REID:

I would like to have Dr. MaWhinney tell us when does chronic alveolar abscess begin, and how long may we expect a tooth to be serviceable after the ends of the roots have been so beautifully rounded.

This is a most interesting subject, one that presents many difficulties. I have treated a few chronic abscesses, and the method I have used has been reasonably successful in my hands, although it may not be the best method. Like Dr. Buckley, I open to find out what kind of an abscess I have to treat. Then I let it alone because I have done the best thing for the patient when I opened into the pulp chamber. Possibly I may wash the canal out with warm water. Then I send my patient away to rest for two or three days. When he returns, I put on the rubber dam and with hydrogen peroxid I wash the canal and pus sac thoroughly.

Some one said that is a dangerous procedure. I believe it is, unless it is done properly, not using the fluid in a closed cavity. I have had some experience and it has made me careful. Then I employ Dr. Buckley's mixture, and it has given me a great deal of comfort. I next seal the canal and usually I do not have much trouble in healing these incipient alveolar abscesses. I have used this method about twenty-three years, and it has proven entirely satisfactory.

DR. F. H. SKINNER:

Too much stress can not be laid on the use of absolute alcohol and hot air, which alone are good disinfectants, but they also place the tissues in a much more receptive condition for the medications which are to follow.

Dr. Logan spoke of tying an upper and lower tooth together.

A piece of dental floss secured to a sore tooth, the free end placed in the patient's fingers with instructions to pull as hard as you push, will usually relieve all pain from pressure or jarring, when the tooth is opened into.

I use a knot known among sailors as a "clove hitch," which, when tied right, will never slip off from any tooth.

DR. T. L. GILMER:

I feel that we are greatly indebted to Dr. MaWhinney for bringing this subject to our attention in such an excellent paper. Some one spoke of iodine staining the teeth following its application with creosote. Ammonia is always present as a result of putrefaction; therefore a tooth with a septic canal into which iodine has been placed will not become discolored because the iodine will be decolorized by the ammonia. I have been using iodine and creosote in the treatment of root canals for twenty-five years and have yet to see a tooth discolored by the iodine.

In acute alveolar abscess, one of the best things we can do to relieve pain is to lessen the determination of blood to the part. To this end I relieve the pain by internal medication, and a favorite remedy of mine, if the patient is robust and without a heart complication, is phenacetin, five grains, repeated in four hours. I prefer if I can relieve the pain by other means not to use codein or morphin because of the danger of establishing the habit. In very nervous patients, I sometimes use bromid of sodium or the elixir of potassium bromid, small doses frequently repeated.

Dr. Logan spoke of supporting a tooth by ligature while it is being drilled to prevent pain. His means is an old but good one; but there is a better method. Take modeling compound, soften it, and make a splint for both lingual and buccal sides of the teeth to support the sore tooth while drilling. This will prevent jarring and also prevent pressure on the inflamed peridental membrane.

In the treatment of alveolar abscess it is quite important to relieve blood pressure by causing watery evacuations of the bowels. Saline cathartics have a tendency in this direction, lessening blood tension, it also drains the blood to the intestinal tract and thereby lessens congestion in the peridental membrane.

With regard to denuded roots: If the peridental membrane is wholly destroyed on a part of the root, I should hardly expect a

permanent cure until this part is removed, and I do not believe Dr. Logan is correct in saying that he would secure a permanent cure with the treatment suggested unless resection is resorted to. Experience has taught me that the uncovered end of a root will again become eroded no matter how well it may be smoothed just as in the case of transplanted or implanted teeth. It is better to cut off the denuded portion of the root and get rid of it at once.

Dr. Logan spoke also of a pyogenic membrane. Histologically there is no such thing. We ought never to use that term. What he calls a pyogenic membrane is not a membrane at all, but simply granulation tissue that is formed to replace the destroyed tissue, but on account of the irritants present can not go on to full cicatrization.

In chronic alveolar abscess which will not yield to treatment I depend largely on surgical means for its cure. Aromatic sulphuric acid dissolves bone in such cases very slightly if at all. It is a stimulant and antiseptic, for this purpose it is beneficial.

There is what may be called pseudo-alveolar abscess. I have had several interesting cases of this kind, one as a result of a partially erupted third lower molar. The opening of the sinus in this case was buccally to the first bicuspid. To differentiate these cases from alveolar abscesses and arrive at a correct diagnosis is essentially important, otherwise sound teeth may be injured by drilling.

DR. J. G. REID:

Local applications are useful to relieve pain, and one agent especially, for which I think I am indebted to either Dr. Harlan or Dr. Brophy—menthol, applied with a pledget of cotton. It will surprise you to see the comfort it will give the patient. Often it will give permanent relief. Dissolve it in a little warm water.

DR. GILMER:

Hot fomentations to the outside of the face are also useful.

DR. STEPHAN:

I wish to relate two interesting and exceptional cases. I concluded I had a dead pulp and that this was the cause of the abscess. I removed a large gold filling from a lower molar, which was very sore, and the other teeth not. But it was not the offender. I removed a large filling from the bicuspid in front, but found no trouble. Then I lanced the abscess and explored, and to my astonishment found

that the abscess was caused by a deposit of calculus on the root. I removed it, washed with a little carbolized solution, and it healed promptly.

The other case was one of abscess over a lateral incisor root. I found a living pulp. I explored and found a very small button of calculus. I removed that and there was no further trouble.

A MEMBER:

I had a patient with an exceedingly tender tooth, and yet it did not seem desirable to puncture the filling, and even if I did so, it seemed that the insertion of the gutta percha, no matter how carefully done, would produce enough pressure to cause pain. Just after getting the tooth nicely dressed and covered with gutta percha, the patient complained of pain. Then I happened to think of the broken nozzle of a syringe, a piece of platinum tubing. I inserted it into the cavity and then packed in the gutta percha over the dressing, making no effort to avoid pressure, without causing the patient any pain.

DR. J. P. BUCKLEY:

In regard to the formula which I suggested, I desire to say that there is nothing original in the use of formalin or tricresol alone. I have tried to study the *action* of both these agents upon a putrescent pulp and suggested the use of the combination of the two in varying proportions. If this mixture is used with judgment and care be taken to hermetically seal the cavity with cement, excellent results will be obtained; otherwise it had better not be used.

DR. MAWHINNEY (closing the discussion):

I feel very highly complimented that my paper should elicit such a profitable discussion, although it was not limited entirely to the treatment of chronic alveolar abscess.

The treatment I suggested for blind abscesses referred to dormant cases, which every practitioner occasionally gets hold of, and is always a serious condition to manage. They usually are not making trouble, and nine times out of ten I have stirred up trouble by opening them up. But during the past four years, in eighty-five cases, by doing as stated in the paper, I have had no trouble. The reason I like the paste of paraform and tricresol is that the formaldehyde is not given off so quickly, and it is less irritating than the formalin alone. It never causes sore teeth.

The reason I suggested delay of two or three weeks in the filling of root canals in these chronic cases is because I do not believe that it is possible to fill a root canal perfectly where there is much absorption beyond the apex. We need new healthy tissue beyond the apex to guide us in filling the root. I believe damage is done by attempting to fill when we have a large, though sterile, cavity beyond the apex.

As to the use of a ligature as mentioned by Dr. Logan, I use the following method: Take the first lower molar for example; I start with a ligature around the second molar, tying it on the distal side; pass the ligature around the second bicuspid and tie on its mesial side; pass around first molar, and tie on mesial side; tie another distally. That gives me a ligature on the mesial of both molar and bicuspid, and one on the distal side of first and second molar. I tie the two mesial ligatures together over the occlusal of the second bicuspid and the two distal ones over the second molar, lifting the first molar out of its socket. I can do that without any pain to the patient nor will my subsequent work on the tooth cause much pain.

I like the Dovers' powder because it causes sweating and elimination of poisons in that way, besides relieving pain. But, after all, if the patient is suffering very severe pain, there is nothing like morphin, although I always hesitate to use it.

Dr. Logan spoke of the use of a 25 per cent solution of aromatic sulphuric acid to soften the calculus. I have very much better success with phenol-sulphonic acid. To make a solution, add distilled water slowly, and keep the solution hot. To make this acid, you must have chemically pure melted crystals of carbolic acid and C. P. sulphuric acid. Then, by adding hot water, you can make any desired solution.

I do not know whether I was the first to suggest the use of tricresol, but I have been using it for eight or nine years, and I am very glad to see the profession adopt this remedy. In putrescent cases no remedy will take the place of tricresol. It is very penetrating, and with the fats present, it forms a new compound which is very germicidal. I believe Dr. Buckley called attention to the fact that the kresols combined with the fats in these cases resulted in the formation of lysol, and being in the nascent condition, it is very potent.

THE ODONTOLOGICAL SOCIETY.

Regular meeting held December 12, 1904, with the president, Dr. J. H. Woolley, in the chair.

DISCUSSION OF DR. COOK'S PAPER.

DR. C. S. CASE:

Although I am free to confess that I know little about the subject, I recognize the fact that we have listened to a very scientific paper. The paper has been presented in such a manner, the various parts of it have been so systematically brought forward, that I feel I have been greatly instructed. I do not know that I have ever gone through the subject in all my reading with so clear an understanding as I feel I have at the present time, because of this paper. And, personally, I thank Dr. Cook for having presented it.

DR. J. E. HINKINS:

When Dr. Cook was informed a month ago that he had to read a paper, he said that he did not know of anything to present. I want to congratulate him on what he has given us. I think this is one of the best papers I have heard him read, and I have heard him read many, and if he can accomplish this with a month's notice, I do not think that in the future he need be given any notice.

This paper does not treat of generalities, and as I have done a little work myself along this line, I can appreciate the efforts the doctor has put forth on this paper. As Dr. Case said, he has given us a very comprehensive exposition of this subject, one of the best I have ever heard. It brings to my mind something I read recently in the *American Chemical Journal*, a discussion as to whether bacteria are the cause of pus, or whether it is the result of a chemical change which the tissues are capable of undergoing, superinduced by the higher chemical compounds in the circulation, which have the power of carrying oxygen to those parts in some form capable of splitting them up and producing inflammation by the use of the peroxid theory.

Technically a toxin is supposed to be neutral, but the chemists have advanced the idea that they are poisons which are taken by the blood and distributed throughout the system in such form that when there is anything to produce an irritation these higher compounds

carry the oxygen and deposit it to help break down cell structure or regenerate the protoplasmic cell.

DR. L. S. TENNEY:

I can not discuss this paper from a histologic standpoint nor from a scientific. While Dr. Cook and I have many thoughts in common, yet when he delves into bacteria and pathology he reaches depths I can not fathom. As I listened to his paper, however, I wondered to what extent we have been benefited by the vast amount of scientific research that members of our profession have made during the last decade or so. When I began the study of dentistry, we were just entering this field. Dentists as a profession had not taken it up extensively before then. Since then we have had the researches of Black, Williams, Miller, Cook and many others, and I often wonder just what influence it has had on practical dentistry.

Our knowledge of diseases of the teeth and oral cavity have been increased largely by such work as this, and all scientific work of this character exerts some influence upon us. We surely can treat lesions of the teeth far more successfully and intelligently since the researches of Miller of Berlin, and every paper of this kind helps us along. It sheds new light on obscure subjects and only by such means shall we arrive finally at the truly scientific method of treating diseases of the oral cavity and the teeth.

I delight in listening to such papers as Dr. Cook's.

DR. C. N. JOHNSON:

This paper has taken us into a field we have not been in the habit of entering. It is an honest effort to give us something original. I studied the paper very carefully while Dr. Cook was reading it, but it requires close study after it is printed to get all of the meat of the paper.

I should like to bring up one practical point. There is something in the management of these alveolar abscesses that has always struck me very forcibly, and, in one respect, it is an answer to what Dr. Tenney said when he raised the question as to what these investigations had done for us in a practical way. They have done this for us. Before these investigations were made we were always in danger, when we entered the canals of pulpless teeth that had not been treated previously, and that had been exposed to the fluids of the mouth, of stirring up a hornet's nest. I think it is the rarest excep-

tion for a man who is surgically clean and goes at these pulpless teeth intelligently, to start up an abscess as we did before these investigations were made.

Why is it that with a tooth with an open cavity, a tooth that has been pulpless for years and has not given any trouble, where there is no evidence of any disturbance in the apical space, why is it that without disturbing the contents of the canal and without forcing anything through the apex, we seal that over and start up trouble at once? Is it that by sealing up micro-organisms we cause their death and poisons are formed from their dead bodies? That tooth cavity has been exposed to infection for years, in contact with a medium that is most favorable for the development of germs, but there is no trouble until we seal it up. Then we have trouble at once.

The reason why we do not have trouble now is that we treat the canal with an antiseptic; we dry it out and avoid forcing anything through the canals. I can not recall the time when even with the vilest tooth, on opening, treating and sealing it with gutta percha that I have had trouble. I would like the essayist to answer this question and clear up a matter that has puzzled me for years. That is a vital thing in the management of pulpless teeth, and it is something that our young men just coming into the profession should be conversant with—how to take care of every pulpless tooth that comes to them.

DR. COOK, (closing the discussion) :

Many points have been raised, although the paper did not deal with any other form of infection than simple alveolar abscess.

As to Dr. Johnson's question: That occurrence is due, first, perhaps, to the fact that the bacteria that are found in the mouth are the most peculiar in their action. I have observed in a number of instances that aerobic germs will become anærobic and intensely pathogenic. They extract the oxygen from their surroundings. If the tissue has been injured, they often can do this more easily than when the tissue is perfectly sound. Otherwise we would be in danger of infection at all times.

The organism I mentioned particularly in my paper, the bacillus of pulp gangrene, is a most active one in decomposition, acting as a saprophytic germ, simply breaking up dead organic matter. I have been extremely interested in the subject of decomposition of the pulp

and the conditions that follow it, such as acute, or subacute or chronic alveolar abscess. This organism penetrates into the pulp, the pulp is killed by certain toxic agents and is then decomposed. In so doing it is practically free from the oxygen of the air and it changes its physiologic condition considerably. If you grow it in the presence of decomposing meat, free from oxygen, it becomes a very pathogenic germ. My idea is that this germ is the one that is the cause of our trouble in abscesses. It occurs under almost all conditions, with and without oxygen. The minute you stir it up a little and exclude oxygen, it becomes extremely pathogenic, forms a gas and ptomaines, such as cadaverin and putrescin, and substances found in all decomposing meats, and they are destructive to the physiologic action of the tissues surrounding the root of the tooth.

No matter what sealing agent is used, it becomes volatile, and when it is placed in the tooth it is volatilized and forces these various germs through the end of the root. You may say that you have not gone into the pulp canal, but only just opened it, and seal it up, but the result is the same, because these sealing agents have little action on the bacteria, except the power of forcing them on in the direction of least resistance, which in this case is the apical end of the root.

Even the most expert are unable to determine why some of these germs are so variable; in one instance we have a pathogenic form and in another a nonpathogenic. Of course, when the leucocytes wall off the process, it remains localized and does not set up a general septicemia or pyemia; the activities of the germ are limited to a certain area—the abscess.

There is one phase of the subject that I wish to touch upon, and that is with regard to the discoloration of teeth. Where the pulp has died and decomposition has taken place under anærobic conditions, the moment you let oxygen into the tooth, or inject peroxid, discoloration often will appear at once because of the liberation of the oxygen; that is what the germs need. When you open into the tooth and leave it open, there is more discoloration than under ordinary circumstances. In the majority of instances we are not justified in opening into a tooth and allowing the oxygen to rush in, particularly if there is much gas there. The sulphur liberated from the decomposing tissues has a peculiar effect on tooth substance, about which I may at some time tell you more.

I believe that in the majority of cases where we have trouble after opening into a tooth it is caused by using volatile substances for sealing. I find that it is extremely dangerous to put all volatile oils into a tooth and seal them up because the tooth is more likely to become discolored.

One of the objects of my paper was to elucidate some of these points, and to make more clear some of the necessities in the treatment of teeth, and that heroic treatment is never to be resorted to in the majority of cases. These changes can not be brought about at once. Much must be learned from experience. Nor do I feel like going into a lengthy discussion of this phase of the subject at this time. As a general principle it may be stated that anything that is irritating is volatile. Iodine is one of the most penetrating, antiseptic solutions we have. It attacks the bacteria before it attacks the tissues, which is not true of other agents. It is the least harmful of any of the volatile substances.

It is a difficult matter to discuss this question in all its phases, especially when we are not thoroughly familiar with them; but at some other time I hope we will be better able to read the signs right and to better understand the subject than we do at the present time.

I thank the Society for the kind reception of my paper.

A CORRECTION.

In our March issue Dr. M. L. Rhein is reported as saying that he believed in leaving a case of arsenical necrosis alone, allowing nature to take its course. What he is really opposed to is *operative* interference. He treats these cases daily to prevent infection of the surrounding tissues, and to get the sequestrum to form its natural limitation as early as possible. He is also reported as being opposed to the use of cocaine for removing pulps, which is contrary to his real conviction. He is in favor of this method, and claims that it is only in rare cases where arsenic should be used.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: C. N. JOHNSON, M. A., L. D. S., D. D. S.

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EDITORIAL.

THE ILLINOIS STATE DENTAL SOCIETY.

The coming meeting of the Illinois State Dental Society, May 9, 10, 11, at Moline, promises to be the most important in its history. There are at present writing more than 900 members, and by the time of the meeting this number will be increased to at least 1,000. This large membership is due to the reorganization plan inaugurated a year ago, and is proof positive of the efficacy of the plan, and of the very able work of the reorganization committee, headed by Dr. A. D. Black.

The revival in dental society work throughout the State in the formation of component societies, and the awakened interest in many quarters which previously had lain almost dormant, is only an indication of what may be done in other States by the right kind of effort. It remains for Illinois to demonstrate at this meeting the practical value of the plan by a representative attendance and an active interest in the scientific and social features of the meeting. Let us all get together on this occasion, and let the older members see to it that the men who are coming into the State Society for the first time are given a most cordial welcome.

The element of personal contact is an important factor in society work, and no matter how promising a program is presented, unless the members mingle together and become acquainted the greatest measure of good is not accomplished.

This will be in one sense a test meeting, and the large additional attendance as represented by the new membership brings a responsibility with it. The new comers must be shown not only that they are welcome, but also that it is decidedly to their advantage to become actively identified with the society. We must make the event pleasant socially, and profitable professionally. Let us all work faithfully to this end.

THE EDITOR'S DESK.

THE EDITOR'S LIP WAS PINNED.

It is never safe to blab. Last month I was in Toronto, Canada, attending the meeting of the Ontario Dental Society, and I inadvertently let out the fact that it was on the occasion of my birthday. I might have known that a domestic secret of that nature thus exposed would get me into trouble of some sort, but I little dreamed of the dilemma it brought upon me. That evening there was a banquet and I was to speak to a toast. Just as the toast was to be announced Dr. A. W. Thornton, of Chatham, asked the privilege of the floor, and the toastmaster graciously acquiesced. Oh, the villainy of that plot! Dr. Thornton began to speak as none other than he can speak, and I sat there with my ears buzzing and my heart thumping. Some of my readers may know how I felt, and if they do I wish they would kindly send the description, because I have ever since been trying to analyze my feelings and have not yet succeeded. At the conclusion of Dr. Thornton's speech he stepped to the speaker's table and handed me a beautiful diamond and pearl scarf-pin on behalf of the dentists of Ontario. Well—I never knew till that moment how to sufficiently sympathize with a fellow mortal who faces an audience without the ability to express himself. I have been in some tight places but that was the tightest. I didn't speak—I floundered.

Before the banquet I had prepared what I thought was a decent sort of a speech for the toast, but that speech has never been delivered. What I said I do not know, but I do know that I must have made a "bloomin' spectacle" of myself.

And all I can say in reparation is that I wish my friends in Ontario could only have known how I felt instead of having been obliged to listen to what I said. I shall preserve that pin for my children's grandchildren.

BOOK REVIEWS.

ORAL PATHOLOGY AND THERAPEUTICS.—A systematic presentation of the subject from the standpoint of modern therapeutics, with 116 illustrations. By Elgin MaWhinney, D. D. S., Chicago. Professor of Special Pathology, Materia Medica and Therapeutics,

Northwestern University Dental School; Member International Dental Federation, National Dental Association, Chicago Dental Society, Odontographic Society of Chicago, Secretary Illinois State Dental Society, etc., etc. Pages 233. Cloth. Published by the Consolidated Dental Mfg. Co., New York, and Claudius Ash & Sons (Limited), London, England, 1905.

This book is a most worthy addition to our dental literature. Dr. MaWhinney has long been known as a careful, conscientious practitioner and investigator and everything he says or writes has the ring of sincerity about it. In this book he has given the profession the benefit of his years of experience, and no practitioner or student can pick it up and peruse it without being the better for it. To specialize in a review where there are so many good things to speak of is unnecessary, and we most heartily commend the book to our readers.

ANSWERS TO QUESTIONS PRESCRIBED BY DENTAL STATE BOARDS.
—By Robert B. Ludy, M. D., late Acting Assistant Surgeon, U. S. A., Lecturer on Practice of Medicine in Temple College, of Philadelphia; Author of "Answers to Questions Prescribed by Medical State Boards," etc. Second edition, rewritten and enlarged. Published by John Jos. McVey, Philadelphia, 1905.

This is a book of 462 pages filled with questions and answers for the purpose of aiding prospective candidates in preparing for examinations before State boards. There must have been a demand for such a work as this, else it would not have run into a second edition. In the treatment of some of the subjects, such, for instance, as those with questions which can be definitely answered in a few words, it will be found helpful, but in others requiring descriptive methods, the answers must of necessity be inadequate, and in some instances they are very far from being an expression of modern ideas or teaching. The book appeals solely to the cramming method, and is not calculated to encourage a broad and intelligent understanding of the principles and practice of dentistry. For the purpose for which it is intended it may aid a candidate in becoming familiar with the general character of the State board examinations, and give him an idea as to what the boards require, but in the difficult task of offering a comprehensive answer to each question the book is not always successful.

PRACTICAL HINTS DEPARTMENT.

EDITED BY G. W. JOHNSON, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, THE DENTAL REVIEW, 55 State street, Chicago, Ill.]

Peculiar Case:—About six months ago I extracted the left upper first and second molars for a male patient fifty-seven years old, and now a wisdom tooth has come in.—*W. J. Hemphill, Dexter, Iowa.*

Toothbrushes:—A brush with stiff bristles should not be prescribed at all. By the proper use of a soft brush the patient can keep the teeth clean and there is no danger of injuring the gums. It has been found that in most cases where a stiff brush was used for a long time the gums began to recede, exposing the necks of the teeth and any dentist knows the result of a continuation of this condition.—*I. T. O. R.*

Harmony Between Tools and Worker:—To produce good results there must be harmony between the worker and his tools because the tools are simply extensions of the power of man. Every sportsman knows that a gun must fit the user and the same may be applied to the tools of manual labor. Attention to this principle will enable the worker to reach his highest efficiency.—*Mark G. McElhinney, Ottawa, Canada.*

Treatment of Sensitive Pulps at the Apex:—To overcome sensitiveness so often found at the ends of root canals in which pulps have been devitalized, pump the canals full of eucalyptol and proceed cautiously to the ends. I have often found this treatment effective in cases of sensitiveness following extirpation under pressure anæsthesia. It is, however, more effective in cleansing roots after arsenical applications.—*R. E. Sparks, Kingston, Canada.*

Treatment with Tricresol and Formalin:—In the use of tricresol and formalin much care should be taken to prevent the preparation from coming in contact with the soft tissues. It is very irritating to the lips and gums of certain individuals and especially to children. This preparation has been found effective in treating cases of chronic alveolar abscess where no other remedy in general use would effect a cure. In treating cases with it, however, much care must be exercised to confine the medicine to the root canal of the tooth producing the abscess.—*E. D.*

Emergency Treatments:—Frequently patients call at the office with an aching tooth, at a time when the dentist is extremely busy. It seems that most dentists are getting into the habit of placing some medicine in the cavity—if there is one—or smearing something over the gums, without examining the case, and dismissing the patient until he has more time. This would be all right were it not for the fact that the patient might suffer in the meantime. We must employ different treatments to relieve different conditions and a proper diagnosis should be made of each case *always*. If it is necessary to remove a filling remove it at once and get at the cause of the trouble as quickly as possible.. It will make it easier in the end.—*I. T. O. R.*

To Attach a Facing to a Bridge:—It occasionally happens that a facing will be split off a bicuspid or molar dummy. The gold may be too thick to attach the facing by means of nuts attached to the pins. Turn the ends of the pins together and solder, forming a loop. Cut a slot in the gold large enough to receive the loop and allow the facing to go to place. Measure the distance the loop enters the slot by placing the facing against the gold with the loop extending over the cuspid. Drill a hole perpendicularly through the cusps and extending through the slot at a point at which a pin passed through the hole will pass through the loop when the facing is in position. Fit a gold wire to fill the hole snugly, cement the facing to place and drive the pin in the hole while the cement is soft.—*R. E. Sparks, Kingston, Canada.*

DOMESTIC CORRESPONDENCE.

NEW YORK LETTER.

New York, April 1, 1905.

MY DEAR EDITOR:

There was a little function at the Hotel Astor on March 2d which kept me confused much of the evening; in fact, to such an extent that the occasion is almost confounded as a dental event, there were so many dentists there.

I said it was a little function, but in reality it was a dinner to which more than three hundred persons attended, probably 10 per cent of whom were dentists.

It was the annual dinner of the Canadian Camp, of which Dr. G. Lenox Curtis is president.

The presence of so many of our profession there emphasized the fact that dentists as a class are keenly interested in outdoor life. You have noticed that many of them try to live close to nature as much as conditions will permit, in fact, you are one of that class, we understand.

Some of those present were Drs. Gaylord, Fowes, McManus and Barker, of Connecticut; Dr. Beasley, of Belvidere, N. J., one of the oldest members of the Jersey Society, also Drs. Adams and Watkins, of Jersey, and Drs. Parker, Ashe, Ottolengui, Deane, Brown, Hull, Meeker, LeRoy, Farrar, and many others from Greater New York.

Some of the oddities on the menu were "puree of Indiana raccoon, Lake Champlain frost fish, filet of Bornean rhinoceros (from the Berlin zoölogical gardens, compliments of H. R. H. Prince Henry, of Prussia), civet of Canadian musquash, mephitis pie, Kentucky wild turkey" and the other accessories that go to complete a dinner.

Rhinoceros filet is very much like our regular beef, but I think it is safe to say that few really satisfied their appetites, probably because there was not a certificate of "good health" exhibited. However, it was a treat for the ladies, as well, who were present in goodly numbers.

The New York Institute of Dental Technique—the youngest of Manhattan's dental societies—held its February meeting on the 28th

at the "Chelsea" in West Twenty-Third street, preceded by the usual dinner at about six o'clock.

Dr. E. Darwin Reed presented an appliance for retaining loose teeth, and read a short description thereof.

Sinclair Tousey, M. D., then read a paper entitled "X-Ray Examination of the Teeth," in which he described: the conditions when required; his own dental fluoroscope, the technique of dental radiography, and protection of the patient from any possibility of injury. He also demonstrated the dental fluoroscope and a rapid method of radiography.

Some of the conditions indicating such work follow: The presence or absence of unerupted teeth, including impacted third molars, the position of such teeth being very perfectly shown.

Caries of the teeth or roots, condition of root fillings and pivots, condition of the teeth and alveoli in cases of pyorrhea, fistula from necrosis or abscessed roots, pericementitis, condition of teeth forming anchorage for crown and bridge work.

He described in detail the process of making the pictures.

He has formulated certain definite rules which protect the patient from any possible injury. This renders the process safe in any hands, but the better the apparatus and technique the better pictures will be obtained.

The discussion was participated in by Mr. Satterlee, Dr. Brush, Dr. Stanton, Dr. Starr and Dr. Hasbrouck, especially referring to the use of the X-ray in cases of impacted third molars.

The March meeting of the First District Dental Society was held at its usual place, the Academy of Medicine, 17 West Forty-third street, the president, Dr. Henry D. Hatch, in the chair.

The paper of the evening was entitled "The X-ray in Dentistry," by Francis LeRoy Satterlee Jr., director of the X-ray and Physical Laboratories of the New York College of Dentistry.

It was profusely illustrated with lantern slides showing radiographs of teeth with imperfect root fillings, causing alveolar abscesses, and the resultant cure and tissue repair where defective conditions had been corrected.

Also cases of necrosis, diseased antra, maxillary fracture, impacted and undeveloped teeth with methods of diagnosis and treatment.

The paper was supplemented by Professor Starr describing in detail practical cases where radiographs had aided in diagnosis.

Drs. A. M. Birkhahn and C. F. Rabell described several cases referred to in the paper, which had come under their personal care. Dr. Sinclair Tousey, of New York, an X-ray specialist, also added to the discussion.

The regular meeting of the "Institute of Stomalology" occurred March 7 at the "Chelsea" in West Twenty-third street. The usual dinner was served at 6:30, after which the meeting was called to order with the president, Dr. Charles Otis Kimball, in the chair.

Under "Incidents of Office Practice," a model showing an extra deciduous tooth (incisor) was shown by Dr. Henry Gillette. The patient was seven years old, of American parentage. There are very few cases on record.

The use of tannate of glycerine was referred to by Dr. F. Milton Smith, who spoke of the good results he had obtained in obtunding sensitive dentine with it. The question was raised during the discussion concerning the use of tannin, and the use of a dilute preparation of formalin, as to whether the formalin would or would not destroy the pulp.

Attention was called to the fact that in making the mixture of tannin and glycerine, it should be done in a *hot* mortar. Water bath would be better.

The paper of the evening was entitled "The Surgical Side of Dentistry," by Morris I. Schamberg, D. D. S., M. D., of Philadelphia. It was profusely illustrated with most excellent pictures thrown on a screen, accompanied with a running commentary on each as it appeared.

In the discussion, Dr. Gillette, in complimenting Dr. Schamberg on his work, and especially on the burs he has devised for these operations (excising the ends of roots, especially), asked the question, "Where do so many cases needing root amputation come from?"

Drs. Rice, Kimball and E. A. Bogue spoke of that portion of the paper referring to impacted third molars and of the great assistance the X-ray was in diagnosing such cases. They described various methods of wedging and otherwise forcing these impacted teeth into such positions as would permit of quite ready extraction.

Dr. F. Milton Smith spoke of his experience in root cases requiring amputation.

Dr. Fossume called attention to the want of care on the part of some professional extractors—specialists—their not being as careful as they should be to avoid infection, and took occasion to laud the good qualities of permanganate of potassium.

On Tuesday eve, March 21st, preceding the meeting of the Odontological Society, it had been arranged (cards had been sent out, preliminaries completed and service secured) to tender a complimentary dinner to Dr. Charles S. Stockton, of Newark, N. J., the occasion being the rounding out of fifty years of dental practice.

Dinner was served at the Hotel Spalding on West Forty-third street at 6:15. Owing to an accident a day or two previous, Dr. Stockton was not present. He had a fall, breaking two or three ribs, which either aggravated or induced appendicitis, for which he underwent an operation and is now convalescing very favorably.

This is the second case of that dread complaint that has worried the friends of both men, the other being Dr. W. W. Walker, that genial, whole-hearted soul, so full of health at all times that it seemed difficult to picture him prone on a hospital cot, but a visit to the New York Hospital, where he was taken for operation and attendance, dispelled illusions. He has been doing remarkably well, for he left the hospital early this week and has gone down to Lakewood where he will stay until he is stronger.

The regular March meeting of the Odontological Society was held as usual at the Academy of Medicine, with the president, Dr. John I. Hart, in the chair.

Under incidents of office practice Dr. Gillette exhibited a very ingenious forceps for removing pins from roots where crowns or caps had broken off. Dr. Turner exhibited a case of irregularity and asked advice. Dr. Jarvie described a case, patient fifty-five years of age, teeth worn down very near the gum line, sensitive, and pulps nearly exposed, and asked opinions. Several gentlemen discussed the case.

The paper of the evening was by Dr. Charles S. Stockton, of Newark, N. J., entitled "The Interchange of Dental Licenses."

A large number of Jerseymen were present, partly because the essayist was Dr. Stockton, and partly because of the intense interest in New Jersey on this subject.

Unfortunately for the meeting, and as a great affliction to Dr. Stockton, instead of his being present to read his paper, he was lying in a hospital in Newark.

Dr. Charles A. Meeker very acceptably read the paper, which emphasized what is known as the Asheville resolution, and portrayed in emphatic terms the injustice frequently done to eminent men in our profession by a too literal construction of the letter of the law.

The subject was discussed pro and con, practically everybody being in favor of the movement.

The regular meeting of the Institute of Dental Technique took place on Tuesday, March 28th, which was preceded by a dinner at the Chelsea.

Dr. F. L. Stanton, a fellow member, read a paper. He is young, but has as mature plans for the "Technique of Office Management," which was the subject of his paper, as any older head in the profession we have ever heard from on the subject. Dr. Stanton read a similar paper before the First District Society in January, some of which I will incorporate at this time.

He establishes a very high plane for the dental operator when he says the patient should never receive a bill of items (not even on request), simply a statement of indebtedness the first of each month. Some did not agree with him, believing it to be the patient's prerogative to have items of bill when asked for.

Dr. Stanton believes in making every hour pay, and he charges per hour, but he does not tell or give them to understand even that his charges are based that way. He said, too, that each year he increases his charges one dollar per hour, in that way causing his practice to bring gradually increasing returns.

From some statistics he finds that the average yearly income for the dentists of the land is one thousand dollars, while it is possible in medicine to collect one hundred and fifty thousand.

He considers as really necessary in the dental office a well trained secretary, a typewriter, letter file, letter press, mailing records. The secretary should have full power of attorney; receive all moneys, pay all bills, make purchases and deposits in bank, etc., and render a trial balance sheet each month. The operator should be relieved of every care except that of the patient.

If a patient presents for his care a condition of pyorrhea with

thirty-two teeth present that requires thirty-two hours' treatment and the charges are ten dollars per hour, he renders a statement for three hundred and thirty-two dollars. He will have disassociated in one mind the cleansing of teeth and a two-dollar bill. As a part of office system he endeavors to insure the return of patients at proper intervals. From new patients not known to him he exacts a satisfactory retainer.

The man who sees twenty patients a day impairs his earning capacity over one who sees but five a day.

Dr. Shields opened the discussion of Dr. Stanton's paper at the First District Society by saying what every one else seemed to feel, that he did not dream of coming in contact with a paper of such strength and magnitude. If work is done improperly it is not worth anything, but if done well is worth all you charge.

Dr. Shields sends itemized statement of *time* only, and argued that the page in his ledger belongs to the patient.

Dr. Stanton said the patient had no right to, nor would he show them his ledger.

Dr. Ferris, of Brooklyn, said we owe the essayist a debt of gratitude. He believes in the time charge for own personal benefit with exception that skilled service is worth more. He has adopted a commercial method—membership in the Merchants' Protective Association.

Dr. W. W. Walker, who was present at the meeting in January, said that he does not charge by the hour, but tries to average so much per day and also believes in the commercial side. It is but honest to give bill of items. Most honest people in the world will ask for such.

Dr. Rhein said he never heard a better presentation of the subject nor better plan outlined. He, too, is opposed to itemized accounts. We should endeavor to distinguish ourselves as professional men. It means lack of confidence to give the patient items. A monthly statement is sent so as to keep their memory fresh.

Dr. C. B. Nash contended that dentists were obliged to give itemized statements. In some States the original entry is necessary to validate accounts. In this State the original day book entry is the only one good in court.

Dr. Good thinks that we head off requests by an hour system.

Dr. Hart in complimenting Dr. Stanton said we are nothing if we have no individuality. Time is capital. Each is a law unto himself. No man can lay down laws for anybody else. There are two methods of doing it, the professional and the business.

The secretaryship of any society is an unenviable position, yet most important. Such an one must be the diplomat, for upon him devolves the bulk of the labors, both local and foreign, and when he occupies that position for a length of time he becomes the adviser—still diplomat. The president of a society is but a figurehead.

Some days ago this notice, signed by a dozen men of the First District Society, was sent out:

"Dear Doctor: In 1884 Dr. Benjamin C. Nash was elected secretary of the First District Dental Society. For twenty years Dr. Nash has faithfully and satisfactorily performed this work and we believe it to be the wish of all the members of said society to show our appreciation of his work and in token of such appreciation to present to him a suitable gift from our society. If you are in favor of our plan please remit to —."

Another notice just received bears the intelligence that "A Tiffany watch has been purchased for Dr. Nash and will be presented to him at our next meeting on April 11th."

Sincerely,

"THE BOROUGHs."

OBITUARY.

JAMES WOOD SLONAKER.

Dr. James Wood Slonaker, of Chicago, died at Denver, Colo., on March 22, 1905, of diabetes mellitus.

Dr. Slonaker was born at Jersey Shore, Pa., September 20, 1858. He was educated in the public schools of Philadelphia, Pa., and was a graduate of the High School of that city. In 1881 he graduated from the Philadelphia Dental College and became associated with Dr. Thomas, of Philadelphia, in the specialty of extraction.

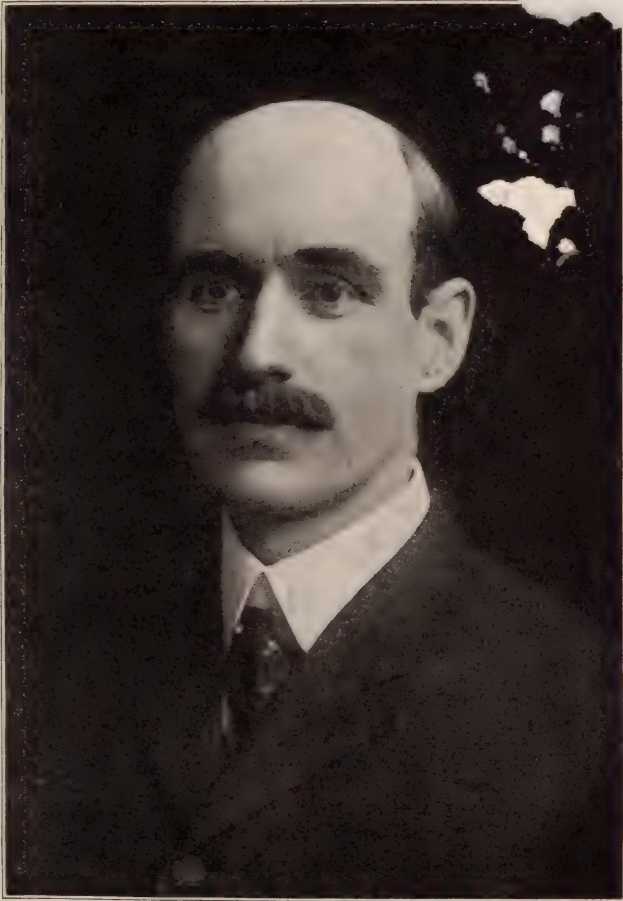
It was suggested that Chicago presented a good field for his specialty, and in January, 1890, he located here, limiting his practice to the extraction of teeth.

Dr. Slonaker was possibly one of the most expert men in a line that, for dignity and efficiency, has reached a high state of perfection in later days. He was the pioneer in this specialty in Chicago, and for a number of years had an undisputed field. His skill soon became known and his fame so widespread

that, shortly after he located in Chicago, it became the exception for the dentist doing general work to extract teeth.

His standing was of the highest order, he having, early in his professional career, identified himself with the Odontograph and Chicago Dental

for bill



DR. JAMES WOOD SLONAKER.

Societies. His name can often be found among the list of clinicians of these societies, and his contributions in the way of papers were many.

He was genial, kind and popular with the profession, and early became a member of the Delta Sigma Delta Fraternity, to which he gave an enthusiastic and loyal service.

Dr. Slonaker leaves a widow and many loyal admirers, who mourn his departure.

F. H. ZINN,

MEMORANDA.

MINNESOTA STATE DENTAL ASSOCIATION.

The twenty-second annual meeting of the Minnesota State Dental Association will be held at Minneapolis, June 1, 2 and 3, 1905.

ILLINOIS STATE DENTAL SOCIETY.

The annual meeting of the Illinois State Dental Society will be held at Moline, May 9, 10 and 11, 1905. Sincerely yours,

ELGIN MAWHINNEY, *Secretary.*

EASTERN INDIANA DENTAL ASSOCIATION.

The Eastern Indiana Dental Association will hold its thirty-fifth annual meeting at Greenfield, Ind., May 3 and 4, 1905. A splendid program of papers and clinics is being prepared.

G. E. STEVENSON,
Secretary.

SOUTHERN WISCONSIN DENTAL ASSOCIATION.

The eleventh annual meeting of the Southern Wisconsin Dental Association will be held at Racine, Wis., May 30 and 31, 1905.

The profession are cordially invited to attend.

C. W. COLLVER, *Secretary,*
Clinton, Wis.

THE MISSOURI STATE DENTAL ASSOCIATION.

The Missouri State Dental Association will meet in the city of St. Louis on May 24, 25 and 26, 1905.

An excellent program of papers and clinics is being prepared and all ethical members of the profession are cordially invited to attend.

SAM T. BASSETT, *Corresponding Secretary.*

LEBANON VALLEY DENTAL ASSOCIATION.

The thirtieth annual meeting of the Lebanon Valley Dental Association will be held at Pottstown, Pa., May 16 and 17, 1905, meetings, clinics and exhibits to be held in the Auditorium, a commodious and well-lighted hall; excellent opportunity for exhibits. For space write the chairman of the executive committee.

C. R. SCHOLL,
Reading, Pa.

ILLINOIS STATE BOARD OF DENTAL EXAMINERS.

The next regular meeting of the Illinois State Board of Dental Examiners to examine applicants for license to practice dentistry in this State will be held in Chicago, May 4, 5 and 6, 1905.

Under an opinion of the attorney general the following are eligible to take the examination before the board: "Any one holding a medical diploma from a reputable medical college; any one who has been a legal practitioner of dentistry for ten years prior to moving into the State, and any one who failed to register in this State at the time the law went into effect, which was in 1881."

Candidates must furnish their own patients and come provided with the necessary instruments, rubber dam and gold to perform practical operations, and such other work as is deemed advisable by the board. Those desiring to take the examination should matriculate with the secretary at least ten days before the date of meeting. The examination fee is \$10. Any further information can be obtained by addressing the secretary.

J. G. REID, *Secretary*,
1204 Trude building, 68 Wabash avenue, Chicago.

RECENT PATENTS OF INTEREST TO DENTISTS.

- 780,322. Electrical dental instrument holder. Monroe N. Callender, San Francisco, Cal.
- 780,146. Dental instrument. Amos A. Wilcox and M. Jewett, Cleveland, Ohio.
- 780,147. Dental instrument. Amos A. Wilcox and M. Jewett, Cleveland, Ohio.
- 780,919. Dentometer. Ned Shockley, Farragut, Iowa.
- 780,589. Dental automatic plugger. Alexander W. Wimmer, Chicago, Ill.
- 781,587. Rubber disk for dental use. Joseph E. Blake, Amesbury, Mass.
- 781,589. Dental plate. Cyrus L. Buckwalter and W. G. Wirt, Loudonville, Ohio.
- 781,405. Blank for dental plates. Marcus A. Coykendall, Grand Rapids, Mich.
- 781,277. Tooth crown holder. Charles W. Fahey, Chicago, Ill.
- 781,420. Artificial tooth. John R. Haldeman, Kansas City, Mo.
- 781,292. Mouth brush. James M. Murphee, Dothan, Ala.
- 781,617. Dental disk carrier. Otto B. Price, Moncton, Canada.
- 781,313. Dental disk package. Jacob A. Thomas, Hanover, Pa.
- 781,168. Means for attaching artificial teeth to plates. James B. Wells, Morris, N. Y.
- 781,762. Electrical dental furnace. Luther L. Bosworth, Cleveland, Ohio.
- 781,876. Abrading disk. Frederick N. Gardner, Beloit, Wis.
- 782,627. Dental plate. Herbert J. Tarr Jr., Chicago, Ill.
- 783,358. Tooth crown anchor. Samuel S. Bloom, Philadelphia, Pa.
- 783,327. Dental root impression and swaging instrument. Adelbert W. Starbuck, Iowa City, Iowa.
- 783,609. Tooth regulator. John E. Canning, Denver, Colo.
- 783,959. Dental separating disk. Roscoe H. Hull, Worcester, Mass.
- 783,804. Dental measuring instrument. Lawrence A. Smith, Port Gibson, Miss.
- 784,098. Dental root extractor. Walter S. Beazley, Lancaster, Ky.
- 784,060. Manufacturing dental plates. Jean P. Matheret, Paris, France.
- 785,018. Dental forceps. Ira P. Norton, Laporte, Ind.

Copies of above patents may be obtained for ten cents each by addressing John A. Saul, solicitor of patents, Fendall building, Washington, D. C.

MY HOUR.

There's an hour not recorded by the clocks of standard time,
Not remembrancer of summer nor a hint of winter's rime.
It's an hour quite creative—by a myriad fancies fed,
When the embers slowly smolder and the folks are all in bed.

Then I'm king in my dominion, with a little desk my throne,
Swarmed about by countless subjects, though I seem to sit alone;
And I hold such sweet communion with the play-folk of my head,
When the night winds softly murmur and the real folk are in bed.

Nothing but a pen and paper, yet a world lies at my feet,
Waiting only touch of magic to portray the scene complete;
Visions weird and visions wondrous, like a message from the dead,
Stealing softly through and through me, while the dear ones are in bed.

Harmless ghosts and little goblins—children of another clime,
Some sedate and others sportive—others lowly, some sublime;
All are weaving with a fabric fine as any silken thread,
Tales and legends of the elfland while the folks are all in bed.

Time is nothing but a shadow, space is spanned by winged thought;
All the myriad things of daytime now appear as things of naught.
All the real and all the unreal, thus mysteriously wed
By this mystic ceremony, while the folks are all in bed.

Thus I sit in waking dreamland as the moments steal away,
Quite unconscious, while the clock is striking in another day.
What though half I think's unwritten, and the other half unread,
Priceless is this cherished hour when the folks are all in bed.

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REVIEW OF OPERATIVE DENTISTRY DURING THE PAST TWENTY YEARS.*

BY TRUMAN W. BROPHY, M. D., D. D. S., LL. D., CHICAGO.

Mr. President and Gentlemen: To review the development of operative dentistry during the past twenty years without omitting certain features of this department of our profession, which may be regarded by some as highly important, and to do justice to the entire subject, would be impossible within the time limit of this paper.

It may be of interest to the younger men of the profession here present to know that the educational institutions of the West have nearly all been founded and developed during the period of time under consideration. One college only existed prior to 1882 in the western States, and that was in St. Louis. All the others have been organized since that date, and with the organization of the colleges of the West, operative dentistry may be said to have received an impetus which has led to the high development which marks it today.

In dealing with the subject of the progress of operative dentistry during the past two decades, I have decided to mention the changes that have taken place and to note the improvements and to call attention to certain changes in material and methods which can not be regarded as improvements. We may consider the material employed, mechanical devices suggested, and used in operative work, instruments and technique, together with specialties into which operative dentistry is now divided.

Nomenclature. Naturally the first subject to claim our attention is nomenclature. Notwithstanding the efforts that have been

*Read before the G. V. Black Dental Club, of St. Paul.

made by eminent men, well qualified to revise the nomenclature of our profession, we find it still in the most chaotic state. I am firmly of the belief that we will never have the nomenclature of dentistry systematized and made universal until a committee made up of men who have given this matter great thought shall review and improve our scientific terms, and discard words which do not clearly express the thought and conditions for which they are used.

Physical Characteristics of Teeth. The study of the physical characteristics of teeth by the distinguished man after whom this club is named, and his printed articles thereon, have been a revelation to many who have not thought deeply on this subject. I realize full well that a great deal of criticism has been offered on the work of Dr. Black. The contention that tooth structure of different teeth possesses the same power of resistance, as declared by Dr. Black, is not in accord with the views of the casual observer. The busy practitioner, who has not conducted experiments for the purpose of comparison of the strength of tooth structure under pressure, is by no means qualified to combat the results of scientific work performed by a man whose accuracy in conducting his experiments enables him to arrive at correct conclusions. Unless we can prove that faulty methods are employed in scientific investigations, and also prove, not by one or two or half a dozen experiments, but by scores of experiments, that the results of Dr. Black's investigations in determining the strength of tooth structure are incorrect, we must accept his conclusions as final. While I have not conducted experiments with a view of testing the strength of enamel and dentine, comparing one tooth with another in the same mouth, I am of the opinion that the degree of density and strength of the enamel in some teeth is greater than in others. The work of Dr. Black in this special line has furnished us a great deal to think of, and has led many practitioners into experimental work with a view to either confirming or rejecting the opinions he has advanced.

The Consideration of the Denture to be Treated. In the early history of dentistry the patient who sought the services of the dentist did so to be relieved from pain. Now, people of education, of culture, place young children under the care of the dentist to be treated at a time when they most need it, in order that extensive caries may

not form. The dentist of modern times assumes a great responsibility when he takes charge of a young patient. He is held responsible largely for the prevention of extensive caries. Modern teaching in operative dentistry makes it obligatory upon the family dentist to examine teeth of members of the family at frequent intervals, not less than twice a year, in some instances more frequently. The fine exploring instrument is a modern device used for the purpose of locating decay in the proximal surface, those which are not directly visible, and those not easy of access. While formerly a patient would apply to a dentist to have certain teeth filled which he discovered needed it, now he applies to the dentist for the purpose of ascertaining whether he has cavities in his teeth, and whether any condition of the teeth requires the attention of the dentist. So the patient no longer directs the dentist as to what he should do, but he seeks the advice of the dentist as to what should be done. Having doubt as to the existence of carious tooth substance in proximal spaces, the operator is called upon to make room for examinations. During the past twenty years great improvements have been made in exposing the surfaces of teeth in contact. The old process of driving wooden wedges between the teeth for the purpose of making space is now, I believe, obsolete. If it is not, it certainly should be. The use of rubber wedges, formerly employed, I believe, is now almost wholly discarded. As a substitute for all these different forms of wedges, we now find much more convenient, with less discomfort to the patient, and capable of accomplishing most thoroughly and satisfactorily, waxed tape, or chlqro-percha tape, placed between the teeth and cut so as to be not unsightly, and yet efficient in spreading the teeth and doing the work well. Many mechanical devices have been suggested for the purpose of separating the teeth during operations. While I do not approve of immediate separation of teeth in all cases by means of steel separators, I believe that if the teeth have been separated by the slow process with waxed tape, the steel separator often serves a useful purpose in holding them steady during the operation of filling. Dr. Safford G. Perry, of New York, was the first to introduce the steel separator. His instrument today is the most efficient of the kind, though many other forms have been devised since Dr. Perry's was introduced.

Cavity Preparation. Twenty years have wrought a great change in the preparation of cavities for the reception of fillings. The work of Dr. Black, Dr. Johnson and Dr. Wedelstaedt in bringing out the new plan of the preparation of cavities has extended its usefulness not only throughout our own country, but throughout the world. The book of Dr. Johnson entitled "The Principles and Practice of Filling Teeth" has been translated into all the languages in which dentistry is taught, and is regarded as the foremost work of its kind.

Prior to 1890 the literature of operative dentistry was filled with complaints of recurring decay about the cervical borders of cavities, and the surfaces in contact with enamel would again break down, and this condition called for a renewal of all work which had been done. During the period of time between 1860 and 1875, in view of the recurrence of proximal caries in so large a per cent of teeth which had been filled, the theory was advanced by Dr. Arthur that the teeth should be permanently separated by cutting away their walls. This would prevent the enamel from coming in contact with enamel, and he advocated that as such a surface would be self-cleansing there would not be a recurrence of decay. Dr. W. W. Allport, of Chicago, believed in the wide separation of teeth as the safest and best means of preventing recurrence of caries. The teeth were not only separated toward the lingual surfaces, but even a greater portion of the occlusal surfaces was cut away, so that the teeth mesio-distally looked more like a saw than like the broad grinding surface such as they should possess. The doctrine of extension for prevention has to a very great extent enabled the dentist to prevent the recurrence of caries. Since the frail borders of enamel, which were formerly permitted to remain in contact with the enamel of the adjacent tooth, and sooner or later became carious, the advocates of extension for prevention demand that these edges be cut away, so that the tooth contoured by filling will not permit tooth substance to come in contact with the tooth substance of the adjoining tooth. Such an arrangement of contact surely will prevent to a very great extent the recurrence of proximal caries. In the use of extension for prevention the operator must exercise good judgment. It is a hard matter to teach a man how to use good judgment. It seems to be something of an endowment rather than an acquirement, though a careful study of the parts to be operated on and the bestowing of

thought on the best condition to leave the teeth in after the operations are completed will enable the practitioner usually to arrive at a safe conclusion. There is no doubt that operators in attempting to carry the teaching of extension for prevention have often made serious and irreparable errors. Especially is this true in the management of the anterior teeth. To cut away a considerable portion of enamel of the anterior teeth with a view to filling with gold, which would be exposed to view, in my opinion would be a serious error, for these are days when the exhibition of large quantities of gold as fillings or any other form in the mouth is regarded in exceedingly bad taste. While this exhibition is overcome to a very great degree in the modern application of porcelain inlays, gold will, in my opinion, always have its place and be regarded in years to come, as it has been in the years gone by, as a safe, reliable material in the hands of the skillful operator for the purpose of conserving teeth. We know that the highest degree of skill is required to insert properly a gold filling. We also know what satisfaction both patient and operator realize when a gold filling has been skilfully inserted, and finished. We know that there is nothing better, and that science and art have not devised a safer and more reliable method of preserving a tooth. If we review the work of the older operators, which antedates the period which I am expected to cover in this communication, we find that non-cohesive gold was largely used, and then cohesive gold was finally introduced; sponge gold was invented, which was known under the name of "plastic gold," and this became very popular for a time. A little later the old operators observed that their fillings had dark borders from sponge gold, and that cohesive gold leaked, and there was a recurrence of caries. This was not the case with non-cohesive gold, which was introduced by wedge-shaped pluggers. As long as the non-cohesive gold was forced tightly to the walls of the cavity, the cavities did not leak. In the remarkable career of Dr. W. W. Allport, as a dental operator, it was my privilege to watch him on many occasions combine the non-cohesive with the cohesive gold in the filling of teeth, and those of you who have had an opportunity to examine fillings which he made forty years ago or more, and if you have occasion to take them out, you will find this wonderful combination of the non-cohesive with the cohesive gold. His fillings did not leak. There were no dis-

colored borders about them by reason of recurrence of decay. He finished his operations with cohesive gold, leaving good, hard, pitless, smooth surfaces. He made an ideal filling, and today we find our best operators combining the non-cohesive with the cohesive gold as he did. So I desire to state, that what sometimes seem to be improvements are only a return to the methods of masters of former days, and in some instances to generations of the past.

INSTRUMENTS.

Bacterial Origin of Dental Caries. In the consideration of this subject of the development of operative dentistry during the past twenty years, we must not lose sight of the fact that within this period, through the untiring efforts of Prof. W. D. Miller, of Berlin, the true cause of dental caries has been determined. With a knowledge of the agents that are active in establishing dental caries, we are better able to destroy them. When Professor Miller published to the world that caries of the teeth was of bacterial origin, many scoffed at the theory. Opposition to him, however, was of short duration. He stood on such secure ground that his decisions could not be reversed. The knowledge which he imparted to us prompted us to be more vigilant in the use of prophylactics, and as oral hygiene has been declared to be the highest expression of prophylaxis, and the most potent means of preventing the invasion of disease, we find in the field of operative dentistry and the preservation of the hygienic condition of the oral cavity a work which, if carefully carried out, will result in benefits to the human family beyond calculation.

Tin. When I was a student in Philadelphia in 1871-2, tin was largely used for filling teeth, and every operator of experience knows that a good tin filling in certain locations will preserve a tooth from further decay, or, rather, arrest the progress of caries, as well as any material known. Every student was required to make twenty-five tin fillings. Not an amalgam filling was inserted during my college course in the Pennsylvania College of Dental Surgery. This was at a time when amalgam was very unpopular. The college faculty did not teach its use. Tin has been revived to some extent in the past decade in combination with gold for cervical borders, but it is a matter of regret that tin is not used in many places where amalgam is now employed. I regard it unquestionably superior to amalgam as a preservative of tooth structure.

Amalgam. Amalgam has been improved very much in the last fifteen years. The study of expansion and contraction, the resisting force, and so forth, enable us to better understand its behavior, and how to use it more intelligently than formerly. Notwithstanding the improvement in the quality of amalgams, which no doubt has been a great benefit to dentistry, the wide publicity of experiments in testing amalgams, in my opinion, has increased and extended its use to an extent that is unjustifiable. Amalgam is not a good material with which to fill teeth. Even the most improved amalgam is unreliable. While it will sometimes remain in a cavity for many years, and the tooth not break down or decay, such cases are not numerous. Nearly all cavities filled with amalgam have recurring decay.

Cements. Prior to 1884 one of the most extensive writers on dental subjects, a man possessing a strong personality, the courage of his convictions, widely published his opinions under the caption, "Plastic Fillings—A Power in Dentistry." When Dr. J. Foster Flagg, of Philadelphia, announced to the profession that he had abandoned the use of gold as a material with which to fill teeth, and had substituted for it plastics, he was held up to ridicule by many members of the profession. While the attitude of Dr. Flagg in discarding gold was not in accordance with the views of the profession, and in my opinion not justifiable, he certainly accomplished much for us in developing plastics. Oxychloride of zinc, improved by him, enabled us to accomplish very much better work with it. Oxyphosphate of zinc in his hands accomplished a great deal; while a contemporary of Dr. Flagg, still practicing, and who twenty years ago strenuously antagonized the views then advanced by him, is now reaping the reward resulting from his efforts. Cements are not regarded as permanent fillings, though they serve an important purpose in the securing of crowns and bridges to their attachments. Without them inlays would be impossible. While Dr. Flagg did not realize that cements would play so important a part in the dentistry of today, the work he did and the efforts he made to further their use in his time developed them to a high degree of perfection which makes it possible for the expert in inlays and in crown and bridge work to accomplish the splendid results now obtained.

Following Flagg, no man has quite likely accomplished so much

in the improvement of cements as Dr. W. V. B. Ames, my fellow townsman. In the making of cements, the analyzing of their qualities, and the manipulation of them, Dr. Ames is a master. Copper cement, which he has invented, possesses a degree of density and durability not equaled by any other cement on the market. In the management of the teeth of children cements are indispensable. There is no material so well adapted to the filling of the teeth of children as cements, the oxyphosphates of zinc and of copper. Few operators would attempt to fill the deciduous teeth with metal, or the first permanent molar prior to the tenth year. So cements have their place as a filling material in the teeth of children.

Porcelain Inlays. Porcelain inlays are claiming more attention today than anything pertaining to operative dentistry. The advantages in color render them especially desirable in conspicuous places, and when they are properly inserted they not only serve a very useful purpose as a means of preventing further caries in and about the cavity in which they are placed, but the æsthetic effect is especially pleasing. In the hands of a skilful operator they may be so inserted as not to be easy of detection. Porcelain inlays, like all other improvements in dental practice, are open to criticism, as they frequently fail to accomplish the purposes for which they were inserted. The rank and file of the profession know little of porcelain inlays. The members of the profession have not learned to use them, except a few practitioners here and there. The time will come when porcelain will be well understood, and will be used in appropriate places. In locations requiring great strength, as the occluding surfaces of molar and bicuspid teeth, in locations which are not especially conspicuous, an inlay made of gold, I believe, is superior to one made of porcelain. Gold has the strength of resistance, and can not fracture, and when well adapted to the formation of the cavity, it will serve its purpose well. Inlays, either of porcelain or gold, relieve the patient of the fatigue and the discomfort which attend the insertion of a large gold filling. They relieve the dentist of the tremendous physical effort and exhaustion to which he is subject in the insertion of a large gold filling; consequently inlays, both porcelain and gold, are hailed with satisfaction by the laity as well as the profession, and when good judgment is used in inserting porcelain in conspicuous cavities, and gold in

those not conspicuous, provided the cavities have been properly formed and the inlays properly anchored, the highest and best results may be secured.

Strictly speaking, operative dentistry embraces the subjects of pathology and therapeutics in their relation to the teeth and their adjacent parts.

Cataphoresis. An innovation in the management of sensitive tooth structure, and particularly of exposed dental pulps, within the past few decades, was cataphoresis. Cataphoresis was heralded throughout the land as a proper measure for the obtunding of sensitive dentine in the preparation of cavities for the reception of fillings. Perhaps there is no set of men more open to suggestions and more apt to spend their hard-earned money for so-called improvements than the members of the dental profession. Whoever will devise a new thing which has the appearance of utility, whether it is of real value or not, will find among the members of the dental profession many who are quite willing to buy. The extensive appliances and apparatus devised for the purpose of obtunding sensitive dentine by the use of cataphoresis, like scores of other things that have been sold to the dentist, have passed into the hands of the junk dealers, and we think of them no more. While there is some potency, no doubt, in cataphoresis, the verdict of the dental profession after due deliberation has been to discard its further use.

Pressure Anesthesia of Cocaine. Taking its place, with more certain results, has been pressure anesthesia of cocaine. Cocaine will surely render dentine less sensitive if applied under pressure. It will surely anesthetize the tooth pulp, so that it may be removed without pain; and yet cocaine forced into a pulp for the purpose of anesthetizing it may cause an injury to the tissues surrounding the teeth, even penetrating through the bone into the inferior dental canal and causing anesthesia of the inferior dental nerve, which may not quickly pass away. A number of patients, who have been treated with cocaine by carrying it through the pulp canal and others by injecting it into the tissues for the purpose of painless extraction, have come to my surgical clinic suffering from a permanent anesthesia of the side of the face upon which it was used. Cocaine is not always safe, when used either hypodermically or injected into a tooth pulp, as it will sometimes

cause permanent absence of sensation in the parts surrounding. Cocaine is an agent that should be used in all cases with extreme care. Even the most minute quantity, carried into the tissues, may cause very unpleasant results.

Peroxide of Hydrogen. Another comparatively recent remedial agent, and the use of which is attended oftentimes with so much danger, and which so frequently does harm, is peroxide of hydrogen and its analogues. I sincerely believe that peroxide of hydrogen, pyrozone, hydrozone, and any of the solutions of H_2O_2 , are doing more harm in dentistry and in surgery than all the other agents combined. For example, let peroxide of hydrogen be carried down through a tooth canal for the purpose of neutralizing the putrescence of a tooth pulp, should the infectious material be carried through into the tissues surrounding the tooth root, an abscess is almost certain to follow. Moreover, if the peroxide of hydrogen is carried through and in such a way as to pass between the periosteum and the bone, it will be almost certain to carry the periosteum away from the bone some distance from the infectious material, and thus carry the infection into parts where it would otherwise never go. Three cases have come under my treatment within the past year of necrosis of half of the lower jaw which was due, I believe, to the injudicious use of peroxide of hydrogen, which was carried into fistulous openings along the border of the jaw, and which dissected up the periosteum far back, carrying infection where it resulted in destruction of the bone.

Root Filling.—The filling of roots of teeth has, I believe, greatly improved in the last twenty years, because we realize the importance of antiseptic cleanliness and the preparation of roots for the reception of fillings, and then, having rendered the roots aseptic, we make use of a filling material which will seal them hermetically. Gutta percha, dissolved in chloroform or eucalyptus, forming a thin layer with which to make the root filling tight, seems to be the most popular of root fillings at the present time. The value of oxychloride of zinc in the roots of teeth is apparent to all who know the properties of this material. The difficulty, however, of introducing it, as compared with gutta percha and the greater certainty of making a good root filling with gutta percha, place the latter agent first among the materials for this purpose.

Orthodontia.—The great field of orthodontia, largely developed in

the last twenty years, might well claim part of our attention today. Dentistry is a profession which is divided into many specialties, and there is no specialty more important than that of orthodontia. Few men have devoted the time and attention to the consideration of the subject which enable them to make of it a success in the highest degree, so we naturally place our patients in the hands of those who devote their entire time to its practice. The work of Case and Angle in developing orthodontia to the high place which it now occupies has fixed their names most prominently in this field of dental practice.

Crown and Bridgework.—Crown and bridgework can not be considered ancient from a utilitarian point of view. It is a part of modern dental practice. It is another great field which holds the exclusive attention of some of our most skilled manipulators. The advent of porcelain in dentistry has not even a more inviting place, nor one in which it is more useful than in the department of crown and bridgework. A porcelain crown more nearly imitates nature than one backed and soldered with gold. It not only imitates nature in appearance, but in form and feeling. It is far more comfortable. Besides, it is more cleanly than a metal-faced or surfaced crown. Gold crowns should not be used except upon molar teeth, and even then porcelain is frequently better. This department of operative dentistry—crown and bridgework—as it surely must be regarded as such, has attained its prominent place in our profession during the past twenty years.

Nitrous Oxide Gas.—In the larger cities of our country the busy operator has found great relief in the establishment of offices by experts in the administration of anesthetics for the extraction of teeth. While many an operator, highly skilled in the use of anesthetics and in the extraction of teeth, finds that when this practice interferes so much with his other duties that skillful, trustworthy men will take his patients and administer anesthetics and carry out his instructions in extracting such teeth as he suggests, he is not only greatly relieved, but gratified. Personally, I have for many years availed myself of the opportunities offered by skillful men to send my patients to their offices for the extraction of such teeth as in my judgment should be removed. I believe that Dr. Thomas, of Philadelphia, was the first in America to make a specialty of extracting teeth to the exclusion of all other branches of dentistry. At the pres-

ent time men may be found in almost all of the large cities of our country thus engaged.

In conclusion, let me say that I have attempted to point out some of the great changes which have taken place during the past twenty years, and which have resulted in the upbuilding of our profession and of placing it in a more favorable light among scientific men of the world. As we go forward in the further development of the dental profession, we must keep in mind the fact that we are dependent upon ourselves for all that we hope to accomplish.

The question that the young man must ask himself is, What is he to do with his life? To what use is he to apply it, so that it will subserve the greatest good to those who seek his services? There are in our profession many unsolved problems. Who are the men ready to go forward and take up the work that has been so faithfully done by Dwinelle, Wildman, Flagg, Bonwill, Atkinson, Cushing, Allport, Abbott, Barrett, and others who have passed away, and of the living, foremost among the leaders of the profession of the country, second to none in scientific attainments and untiring energy, the Nestor of the profession of the West, is Professor G. V. Black.

MY INDEBTEDNESS TO THE TEACHINGS OF DR. G. V. BLACK.

BY C. N. JOHNSON, L. D. S., D. D. S., CHICAGO, ILL.

My first acquaintance with Dr. Black dates back just twenty years ago last autumn, when I sat as a student in the Chicago College of Dental Surgery and listened to his lectures on Dental Pathology. I very well recall the impressions he made on me at that time, which were that he cared more for knowledge, for truth, for fact, than he did for ostentation or show. I confess that there were times when in his teaching it was rather difficult to follow him. He was so profound a scholar on the subject himself that it was natural that he should occasionally carry the class beyond their depths. I remember in his first few lectures he used such enormous words and rattled off bacteriological terms in such a familiar and bewildering way that I came very nearly being awed with all this display of

*Read before the G. V. Black Dental Club, of St. Paul, February, 1905

pathological learning. And yet the individuality of the man prevented anything in the nature of reserve or unapproachableness, and I was early drawn to him in a peculiar way. With the idea of saving time and systematizing his work, he was in the habit of writing out his lectures very fully in advance, so that frequently they were, to a large degree, read to the class. It was at such times as these that the teaching occasionally went over our heads, but there were other times—times that I shall never forget, no matter how long I may be privileged to live—when possibly in answer to a question or for some other reason he would drop his notebook and begin to speak off-hand. Oh, gentlemen, those were the feasts! Not a word escaped us then. Not a single phrase but what was perfectly clear and vivid to the listener, not an idea that was in the least vague or indefinite. It was at such moments that the very essence of the man poured forth in a way to leave no possibility of mistaking his meaning. How well I can picture him to this day, forgetting all about his perfectly arranged notes and with the manuscript lying neglected upon the desk, he would pace back and forth in front of the class and pour out such a wealth of knowledge from his abundant storehouse that it was a treat for the gods, provided the gods cared anything about Dental Pathology.

And I may say, parenthetically, that this one experience, together with other impressions gained since then, went no small way toward influencing my future policy as a dental lecturer. Ever since I began teaching I have avoided depending too much on notes, or referring to them too often during a lecture. I merely want my headings properly outlined, and then for the rest I want the eyes of my class.

In these lectures of Dr. Black's I got my first real insight into dental pathology, and I also got a certain point of view in the study of scientific subjects which has served me ever since. I shall always deem it an honor to have graduated under such a man.

When he went back to Jacksonville and I began practice in Chicago I was in the habit of writing him quite frequently upon such subjects as impressed me in my reading, and in one of the very first letters he wrote to me under these circumstances I received something of a shock. I was inclined in those days to look with a great deal of respect—which I hope I have not yet altogether lost—and even with considerable awe upon the men whose names appeared

prominently in our periodical literature. When one of them made an emphatic assertion I was accustomed to accept it with very little doubt, and so when one of our then noted men wrote an article in the course of which he stated that softened dentine left in the bottom of a cavity under a filling would recalcify and become good, firm dentine again after being well protected by the filling, I was thrown into something of a dilemma. It would never do to doubt the word of so great a man, and yet the recalcification of dentine under such circumstances was entirely foreign to my understanding of the nature of tooth tissue. So I wrote to Dr. Black, referring him to the article and asking him to explain to me the process by which this recalcification could take place. He answered that this fallacy of the recalcification of softened dentine had somehow gained admission to our literature and for some reason seemed to stick, but that it had no foundation in fact. And thus my trust in the infallibility of at least one noted man was suddenly shattered. I may also say in passing that this is not the only instance in my knowledge where Dr. Black has by his investigations disturbed the preconceived ideas of many of our noted men. And yet it has all been done in such a dignified and unobtrusive manner that those whose opinions he has most opposed are ever ready to do him honor.

Shortly after I became acquainted with Dr. Black he brought out his work on "The Formation of Poisons by Micro-organisms," and I have often been surprised that this book has not been quoted more in our literature than it has. The significance of the work done by Dr. Black along this line has not been fully recognized by the profession, and my sole regret in studying his professional career is that his other duties did not permit him to prosecute his work along pathological lines to a fuller fruition. If he had been allowed to devote all his energy to this kind of study we would today know more than we do about such diseases as pyorrhea alveolaris, erosion, and, above all, dental caries. Who knows but what prophylaxis of a scientific and definite sort would have been an accomplished fact in all of these diseases by this time if he had been allowed to delve more deeply into the conditions which bring them about? It remains for some investigator of the future to take up this work of the study of the conditions in the mouth which bring about these various diseases, and of the best means of scientifically preventing them.

Dr. Black's next work which impressed me was his study and systematization of our nomenclature in his capacity as chairman of the committee on nomenclature of the World's Columbian Dental Congress. Up to this time our nomenclature was in a more or less chaotic condition and his report before that body went a long way toward calling the attention of the profession of the world to the necessity of a uniform and systematic method by which writers everywhere could present their views in a definite manner which could be readily understood. In fact, his plea for definiteness in expression in the description of technical procedures has done much toward clarifying our literature and making it possible of unmistakable comprehension on the part of readers. His love of system and definite statement also subsequently led to his arrangement and classification of the instruments used in dental practice, and of the best methods of instrumentation.

In 1894, when I was editing *THE DENTAL REVIEW*, he did me the honor to invite me to Jacksonville and visit him in his laboratory, where he was then making his exhaustive studies into the physical characters of the human teeth. I shall never forget the impression that this demonstration made upon me. I had never obtained so clear a conception of the immense amount of detail and the infinite pains to be taken in every step, together with the intricacy and delicacy of the apparatus used in scientific experimentation as I received on that occasion. I came away not only with higher appreciation of the man himself, but also with increased respect for the value of scientific research—particularly such research as I had witnessed. I was also impressed, as I have been ever since in my clinical observation, with the conviction that the character of tooth structure has only little to do with the inception of dental caries in the mouth, and that it is more a question of the conditions surrounding the teeth than of the teeth themselves. This led me to a careful study in my practice of the clinical manifestations of susceptibility and immunity, a study which has proved of the greatest practical value to me in the management of dental caries among my patients. I owe more to Dr. Black in this one respect than I shall ever be able to repay.

It was shortly after this that I got myself into some trouble with Dr. Black. Dr. E. K. Wedelstaedt called at my office one day on

his way home from Jacksonville, where he had gone on one of his regular pilgrimages, and said to me: "Dr. Black is beginning the study of the characteristics of some of our filling materials, and I wish you would publish in the next issue of *THE DENTAL REVIEW* a request for the various manufacturers of amalgam to send him a sample of their product for test." Of course, I did so. Who would not? The next time I saw Dr. Black he came at me with some such remark as this: "Well, you've got me into a pretty mess!" I asked him, how? "Why, that amalgam business. The stuff has been pouring in on me from all quarters till I'm nearly snowed under with it." I am afraid I was unsympathetic. I merely told him to dig himself out, concluding with Mark Twain's classic remark, "If I've done anything I'm sorry for, I'm glad of it." And yet I do not recall that he took particular offense at this impertinence. In fact, if I remember correctly, he merely smiled and lighted a fresh cigar. It is always a good sign to see Dr. Black light a fresh cigar. It usually means that a fresh talk is on tap, and a talk from Dr. Black under these conditions is always interesting. And then he told me what this investigation involved, and spoke of its importance to the profession. Thus began his well known study of filling materials—a study which has resulted in a much better product being furnished dentists the world over. Think what this means for the welfare of the people of the civilized world—that their teeth are being better preserved today because of the investigation of this one man. We seldom stop to think of the far-reaching effects of the work of our unselfish scientific students.

I recall one significant remark made to me by Dr. Black one day in my office while he was in the midst of his amalgam experiments. He had found that amalgam was in the habit of doing peculiar things, among others its tendency to crawl out from under stress. In the course of our conversation I asked what we were going to do with the stuff. He instantly replied in his characteristic way: "Put it in a box." This, of course, implied that in preparing cavities for amalgam the best results were to be obtained by making flat seats for it to rest upon and parallel walls extending from these seats. This is the basis of his principles of cavity preparation for all classes of fillings subjected to stress.

And speaking of cavity preparation brings me to one of the

most important of his many teachings. His study of the characteristics of enamel and the proper formation of enamel margins, his principles of extension for prevention, his cavity formation for the most secure retention of the filling, his emphasis of the proper form of the interproximal space, the significance of the contact point on proximal fillings, and the general anatomy of the teeth are all too familiar to the members of this club to require more than a passing mention on my part at this time. And yet I can not forbear once again calling attention to what all these things have meant to the profession. I would not detract one iota from all the work of the many noble men who wrought in the profession before the time of Dr. Black. We are often inclined to overlook what has been done in the past in our admiration of the accomplishments of the present. I love to venerate and bring my tribute of respect to the pioneers of our calling, and yet it is safe to say that no man of any age has made so decided an impress on the profession in so many ways as has the subject of my sketch. As an observant member of the profession once remarked to me: "Dr. Black never takes up any line of study without leaving the finger marks of his strong individuality vividly upon it." And it is this individuality which will make his name live long in the annals of dentistry. Dr. Black seldom approaches the solution of any problem in precisely the same way that other men do. He has a way all his own and it is usually a very effective way, one that commands respect at the outset.

In bringing before you at this time some few of the many things for which I am personally indebted to the teachings of Dr. Black I have tried to write dispassionately. And yet how is it possible, in summing up one's personal impressions of this man to write dispassionately? The many pleasant hours I have spent in his company, the wondrous benefit of his example to me as a man and a dentist, the myriad delightful phases of his personality, his love of fun as well as his respect for the profoundest things of life, his almost boyish delight in adventure, his ever ready fund of personal reminiscence, all come up to me in a profusion of memory whenever I think of him. But I find I have dropped into one slight inaccuracy in this summing up. I said his "ever ready fund of personal reminiscence," but it is not always that Dr. Black can be made to talk about himself—more's the pity. And yet it has been my personal

privilege to be made the recipient of so many of the incidents of his past life that I feel I know the man as I know few men, and this I look upon as one of the chief distinctions of my professional life.

To be permitted, therefore, upon this occasion in the presence of so many of his friends to pay my tribute of love and respect to the man who professionally and personally has meant so much to all of us is a rare privilege which I most cordially embrace. And it is all the more gratifying to me that I have been accorded this opportunity through your program committee while the subject of my sketch is still with us, and before the ultimate inevitable had made my task a sad one.

In the history of nations, in the record of events, in the evolution of great movements, in the fruition of reforms, certain names must ever stand out as representing conspicuous forces in the progress of the world; and when the history of dentistry shall have been written, however far in the future the record be made, no name will shine with greater luster in all the galaxy of noble men who have gone before than that of Greene Vardiman Black.

THE JANUARY ITEMS OF INTEREST.*

BY DR. W. H. K. MOYER, LITTLE FALLS, MINN.

For the reason that some remarks contained in the following essay may cause discussion and that I may be accused of being used as a club with which another's battles are fought, I wish to state before reading the essay that the subject is entirely of my own choosing, not a single suggestion as to what the contents should be has been offered me, and up to the present reading no one, not even the men who are on the program to do me the honor of opening the discussion, has any information as to the contents. So I wish it thoroughly understood that whatever of blame or punishment it shall merit must justly fall on the writer's shoulders.

In a gathering of this kind it seems a fair estimate that at least half of those here present are subscribers to or readers of the *Items of Interest*, so that a goodly number of you are doubtless reasonably familiar with the contents of the January, 1905, number of this

*Read before the G. V. Black Dental Club, of St. Paul, February, 1905.

journal, some portions of which I am going to ask you to consider somewhat in detail.

Am I wrong when I take the ground that we all are, or should be, pursuing a continual post-graduate course of study? That our chief textbooks for this study are the dental magazines—that we have the right as students to expect and demand that the subject matter contained in these journals shall be suited to our needs, that the ideas promulgated shall be up to date and such as are calculated to help us forward in our constant struggle to keep in the van of professional progress?

Whether the articles to which this paper shall refer are of this class—whether they are beneficial to the profession at large, and more especially to the younger practitioners whose ideas of operative procedure are as yet in the formative state—whether these articles make for progress, I shall leave for you to decide.

Under the heading of "Society Papers" appears an essay read before the Boston and Tufts Alumni Association by Dr. B. Holly Smith, of Baltimore, a man of not only national, but international reputation, a man for many years a dental instructor—a man whose opinions will carry great weight with the dental world.

What ideas do we find him advancing? The first half of his paper is given over to the preparation of the mouth for operating—prophylaxis and separation of the teeth. The ideas advanced here are sound and in accordance with accepted methods, but now we come to the heading "Protecting Cavities from Moisture Without the Dam."

To avoid that false effect which a short quotation sometimes gives, I shall read you a portion of his paper—page 29:

"Next, I want to speak of the protection of our field of operation from moisture. I feel quite satisfied that it would be unbecoming in me to advocate any retrograde step in the practice of dentistry. I know that you would not expect it of me, and still I come as a pleading advocate for the patient, and ask you not to use so frequently, so unnecessarily, the rubber dam. Do you know that most of my patients do not like the rubber dam? It is a positive fact. They are not fond of it. I have had patients who have said to me repeatedly that they would rather never have another tooth filled than have the rubber dam. I think we use it without any considera-

tion for the patient's comfort. We use it where there is absolutely no necessity for its use. I would not say this, of course, to a class of students. I think there are "dogs and other animals" that are properly sacrificed in behalf of science; so, too, are they who have to put up with all of the rough treatment which students and demonstrators put them through; but we are talking now of an entirely different class of people. We are talking of patients from the more polite circles who are accustomed to refinement and who resent vulgarity and painful situations. Now, did you ever see a patient who really was happy with a rubber dam on? I never did, even though I have used it a great deal, though not so much now as formerly. I make a plea for the use of other means in keeping dry our field of operation, such as rolls of cotton and paper, so conveniently prepared by such firms as Johnson & Johnson and the White Company. By placing these rolls over the ducts, it is quite possible to do nearly any operation in dentistry which requires less than one sheet of gold."

Now a little from page 25:

"In the first place we find the teeth covered usually with various layers of mucous and salivary secretions, imbedded in the films of which we find pneumococci and streptococci and staphylococci and various other cocci. Now, these germs, ladies and gentlemen, are quite numerous, and their presence is significant; their genealogy and their progeny would make some of the New England family trees look like thirty cents, especially their progeny. Barnum's statement, that there was a sucker born every minute, is a very feeble expression when we regard the large number of these cocci that are born every second."

In spite of the fact that the Doctor recognizes the variety and numbers of these bacteria in the mouth, he sees, or at least recognizes, no use for the rubber dam except to "keep dry the field of operations."

He gives this advice to a surgeon, again quoting from Dr. Smith, page 26:

"I don't think you, sir (turning to Dr. Thayer), have any right to do an abdominal section without first having the patient's mouth disinfected and cleaned. The presence of these various germs in large quantities, the fact that they are carried into the alimentary tract and that many of our extensive abdominal operations fail because of

infection is ample ground for the contention. The staphylococci enter the little channels that lead from the cells and finally on until they reach the alimentary glands. Infection is not an uncommon thing. I do not think that we realize as much as we ought the probability of infection from the mouth. The mouth is usually a hot-bed of micro-organic life."

Yet in the same essay he tells us that we are to avoid the use of the rubber dam as much as possible, because it is unpleasant for and inconvenient to the patient. Would he advise the surgeon not to have the mouth cleansed if it were unpleasant for or inconvenienced the patient?

Is it true that we are so addicted to the use of the rubber dam that we need to be restrained? Are the majority using the dam back of the six anterior teeth, except in the rather rare cases where gold is to be used?

Dental agents inform me that they do not carry stocks of rubber dam clamps, because there is little or no call for them. These clamps are almost indispensable in the application of the dam to teeth back of the cuspids; therefore, from this I argue that the dam is not in ordinary use for those teeth.

Perhaps Dr. Smith would claim that where "prophylaxis" is practiced the germs are done away with, but if we are to believe our authorities on bacteriology, an aseptic condition in the mouth is not possible, and the Doctor has brought forward nothing to disprove this. He gives us no information as to the preparation of the cavity, but it must be the time-honored procedure of flushing out the chips and debris with water. Now, I ask anyone here, who has faith in this water method, to prepare a cavity in this way and when it is completed apply the rubber dam and thoroughly dry the cavity. If the cavity be one that involves fissures or extends some distance into the dentine, it will be against all my experience if the operator does not find decayed dentine occupying some places where he thought he had cut to sound tissue.

Another way of showing how deceptive moisture is when preparing a cavity that is thoroughly dry, is to leave a little of the last layer of decayed dentine and moisten it with carbolic acid or one of the oils and notice how quickly it assumes the appearance of sound tissue. But laying aside these questions of bacterial in-

vasion—of proper cavity preparation—is it not true that as a rule dry cavities are less sensitive to cutting than wet ones—do we not, by using the rubber dam, have more time and freedom for attention to those details which make for stability and artistic work, which make toward perfection? Is it not true, let the filling material be what it may, that in all ways we almost invariably do better operations when we make use of the rubber dam than when we do not, and is it not true in the light of experience that the use of the rubber dam is best for our patients and best for us?

The making of Panama hats may be better carried on under water, but it is past the day when such methods should be advocated or pursued in any part of filling operations on the human teeth.

Under the heading, "Selection of Materials," Dr. Smith advocates the filling of cavities in the proximal surfaces of anterior teeth with non-cohesive gold worked from the lingual surface so that the tooth does not appear to be filled, while for cavities too large for this, porcelain should be used. As he ignores extension for prevention entirely and as this essay is not intended to discuss porcelain, we will pass to his next heading, the "Crenshaw Matrix."

Under this heading he advocates the use of the matrix in gold operations.

It would seem that at this late day some cognizance should be taken of the skillful work done by men from the northwest, and their demonstrated ideas accepted.

Where is the man who is willing to demonstrate that he can take the same class of cavities and with the help of a matrix fill them as rapidly, fill them as well, have as good condensation—general and marginal—have as good contour and contact points as the fillings being made for your inspection and consideration at this clinic?

If such a man there be, he has been most conspicuously absent at the different clinics it has been my good fortune to attend.

The rest of Dr. Smith's paper I shall pass, but wish to say a few words about the ideas of some of its discussors.

Dr. Brigham, p. 56: "As to the use of matrices, I use them continuously, but I do not use those that are prepared and on the

market. I make, like Dr. Ainsworth, one for each case. I can cut out the matrix and put it in place and hold it there in a few minutes. I wedge it up with cotton. That may seem like a soft wedge, but you can do it for plastic filling, and it holds it in place very well. I have filled many medium-sized cavities with gold with the matrix held up with cotton only. You can hold it up there as tightly as you wish to."

Dr. Ainsworth says, p. 57-58: "I am glad to hear Dr. Smith speak in commendation of the matrix, for outside of Dr. Louis Jack, I believe Boston is pioneer in its use. It certainly has been dosed out to you generously at my hands. Could I have known twenty-five years ago what I know today regarding the use of the matrix, I could have saved my patients and myself many a tedious hour. I would go further than Dr. Smith and say that by its use we save one-third the time, are able to utilize the good qualities of both non-cohesive and cohesive gold, produce far better insurance against future decay, fill teeth with gold that otherwise would be impracticable, and in every way find it an advantage. The men who speak of the matrix as "a snare and a delusion" are not masters of the detail in its use. Ready-made matrices have never found much favor with me. I prefer to make the matrix myself for each case. It takes but two or three minutes to make a matrix, using what is known as cold-rolled French steel, which has a temper peculiar to itself. This is readily burnished on a large piece of Faber's erasion rubber into the desired shape, and may be held against the teeth in a variety of ways. Where you have two compound approximal cavities facing each other in bicuspid or molars, the matrix is readily held in position for one by filling the other with pink gutta-percha; again it may be ligated on, or held by a Perry separator. Many times a bit of orange wood at the cervical wall is of advantage."

Is any discussion needed for such ideas as these? Can you imagine forcing a filling material as unyielding as a quick setting amalgam mixed to the consistency which gives the best results, into a cavity the fourth wall of which is held in place by cotton? Can you figure out the specific gravity of gold malleted against a wall supported by cotton or so elastic a substance as gutta percha?

It means, gentlemen, that the **plastics** are simply in "mush

form" when used and that the specific gravity of the gold is far below what is necessary to exclude moisture.

It seems to me that Dr. Smith sums up the case against the matrix very neatly if we properly interpret his closing paragraph, which reads as follows, p. 31:

"There are four or five different matrices made—the Perry matrix is a very good one, indeed. This shows the Ivory retainer. There is a little piece cut out of it in this case, as you can see; just that little piece of metal is cut out with scissors and placed in position. This makes the work so much easier. Really it seems to me that half the pains and difficulties of operative dentistry have passed away, and it becomes almost a pleasure to do the ordinary operations."

Exactly as he says, gentlemen, the "ordinary operations." Now what are the ordinary operations as we see them day in and day out?

About seventy-five per cent have failure written all over them, perhaps twenty per cent are successes and immunity to decay kindly steps in to preserve the other five per cent.

We here are not trying to do, nor are we satisfied with doing the ordinary operations. We know there is something better and we are striving after it.

May I now call your attention to the editorial pages, on which we find our old friend "extension for prevention" discussed?

I quote a few paragraphs from page 72:

"The First District Dental Society has crowned itself with glory. At its December meeting Drs. Black and Wedelstaedt expounded the doctrine of extension for prevention.

"The reception given to Dr. Black, when he was introduced by the president, to an audience of nearly five hundred dentists, was nothing short of an ovation; indeed, the applause continued until Dr. Black raised his hand for silence.

"He then proceeded to give a presentation of his subject which proved to be one of the very best of his many fine papers. After the paper proper, he delivered a most instructive lecture, mainly dealing with the initiation of caries in the teeth. He presented in evidence more than two hundred lantern slides, the majority of these being superb photographs of human teeth, whole and in sec-

tions, showing the inroads of caries. These were followed by wash drawings illustrating the method of cavity preparation, and the true limitations of extension for prevention. These limitations proved to be a welcome surprise to the men of the east, who learned for the first time that the extension should be neither so broad nor so deep as some of Dr. Black's disciples had led them to believe. Many discovered that they had been for years practicing very close to the lines laid down."

Now, from his summing up, p. 73, "These latter are the regions of comparative immunity. He finds the four angles of the human tooth to be peculiarly immune; these be the two labial approximal angles and the two lingual approximal angles. He also considers that the nearer the gingival margin of a cavity is made to reach or lie under the gum margin, the greater the immunity. Extension for prevention then is such extension of cavity margins as will lay these margins in comparatively immune zones."

Is this not the teaching embodied in Dr. Black's essays published in 1891? Is it modified in any respect? Has not the subject been fully discussed in dental magazines for almost fifteen years? Is it believable that a man could be for years practicing "very close to the lines laid down" and not be intelligent enough to know it?

Have any of you ever had a patient from an eastern office, the work in whose teeth would bear out this view of the question? I don't mean by this one isolated filling where through force of circumstances the cavity was made broad and deep enough to bring the margins into areas of immunity, but several fillings in the same mouth where the cavities were so extended with the evident idea of prevention of future decay.

If many of the eastern men have been practicing this for years isn't it highly probable that some of their work would have found its way to this section of the country where some of us would be sure to take notice of it? One more question I would like to ask, and that is, who are these accredited disciples of Dr. Black's who have led our eastern brethren to believe that Dr. Black meant anything different from what he himself has so many times clearly stated both orally and in various essays? If there be such men who wield such a mighty influence, would it not be best for our

future protection that the editor should let us know who they are, that we may be on our guard?

Now, gentlemen, this last allegation and the cool assumption that there is nothing in this essentially different from other methods, looks to me very like a man who has just climbed on the rear end of the band wagon trying to prove that he had been there all the time, but hadn't been playing his horn because he didn't recognize the music as the pieces he had been practicing at home.

Let us see what he has to say about methods of filling cavities. I quote from p. 74:

"On the second evening of this great meeting Dr. Wedelstaedt explained the technique of filling this wide open cavity. We must either cover the gingival seat first with one fold of non-cohesive foil (the Black method), or else we might cover it with three cylinders of non-cohesive foil. The rest of the cavity could well enough be filled with cohesive foil. Why should this be? Let us analyze the proposition.

"Let us divide the margins of this cavity; there is the gingival margin, the labial margin, the lingual margin, and the occlusal margins; let us say four margins, or parts thereof. We are told that the occlusal margin, which endures the greater share of masticatory stress, may be thoroughly well protected with cohesive gold. It is admitted that the labial and the lingual margins can be made equally safe with cohesive gold, always provided that the extension has brought them to the area of greatest immunity. But at the gingival margin cohesive gold must be eschewed. Now why? Have we not extended this margin to an immune area also? Have we not made the seat flat? Can not we mallet our gold more accurately, more densely, more tightly, against this flat seat than elsewhere? Remember that we were instructed to shape this cavity that we may be able to fill it not only *accurately*, but also *conveniently*. And yet when Dr. Hofheinz was asked, why, if he could protect all the other margins with cohesive gold, he should prefer non-cohesive for the gingival margin, his reply was "Because it is the most inaccessible." But have we not shaped the cavity so that it can be filled *conveniently*? Is not this very gingival margin the only one against which gold may be packed holding the instrument in the line of the long axis of the tooth?"

It hardly seems possible that a man can see from one to two sheets of gold placed in position in about as many minutes, the hardest part of the cavity easily and properly filled and then ask why the gold is not cut into sixteen or thirty-two pieces, and a half an hour and a great deal of energy expended in malleting it to place to attain practically the same result.

The editor does not claim that non-cohesive gold will not protect the margin as well as cohesive gold, but expends his energies in proving that if cohesive gold can not be used the extension theory must fall. He ignores the gain in time and nerve force—he forgets that non-cohesive gold is much easier to trim to form than cohesive—he says nothing of the advantages the non-cohesive method affords for marginal condensation and its unequalled record as a tooth saver. The fact that a cavity has been prepared so that it may be conveniently and accurately filled does not mean that all parts are equally accessible, and I hold that the answer of Dr. Hofheinz is right when he states that the gingival margin is the most inaccessible part of a cavity in a bicuspid or molar.

That it would be possible to protect this margin with cohesive foil is amply proved by the fact that in incisors and cuspids it is common practice to use cohesive foil throughout the filling, but where is the reward for the expenditure of an extra half hour and the wear and tear on both patient and operator?

Let me quote again from page 75:

“To those who have always used cohesive gold, it is exactly this much-discussed gingival margin about which there is the least anxiety, and it is for this very reason. These men believe that at least they can securely pack gold against the gingival seat and gingival margin because it can be packed in the direction of the long axis of the tooth. Coming to the side walls, if the plugger is held similarly, that is to say, at right angles to the margin, it would be directing a blow across the tooth which would be inadequate and unendurable. If held in the direction of the long axis of the tooth, the side of the plugger would rest against the margin (dotted line in illustration) for which reason the instrument is usually slanted to some extent, so as to make impact against the margin. Exactly the same condition presents when packing against the occlusal margins. Thus we find, as claimed above, that the gingival seat

and gingival margin offers the most favorable conditions for the proper packing of cohesive gold. If then this form of cavity preparation brings all the margins into the safest areas, and if it is a convenient form, and if cohesive gold will preserve three-quarters of the margins, it must follow, and what is more, it does follow, that cohesive gold will save all the margins."

There are only two conclusions to come to here. Either to make his point the doctor deliberately ignores good principles in gold packing, or he knows absolutely nothing about them.

To insure tight margins, gold packing with either cohesive or non-cohesive foil must be carried on by a system of wedging and no man, be he ever so skillful, can make a tight filling by malleting cohesive foil against a flat gingival seat, while holding his plugger in a line with the long axis of the tooth as is shown by the illustrations accompanying Dr. Ottolengui's editorial.

Under malleting, cohesive foil becomes very intractable, harsh and elastic, and tends to spring away from a surface against which it is malleted at right angles. It is high time that a little missionary work was being done along this line, as well as on cavity preparation, as the two operations must ever go hand in hand. Perhaps no procedure in dentistry has so little to offer the student, in no part of their teaching are our colleges so weak, and among the profession no operation has a less defined method or uniformity than this packing of gold.

It is usually a matter of making the filling secure, but there are no definite ideas of building the filling, of the interlamination of the gold, of the stepping of the plugger point or the proper handling of the margins. Let us hope that in the very near future something definite will be developed along this line.

May I call your attention to Dr. Ottolengui's closing paragraph, page 75?

"If, however, cohesive gold will not preserve the gingival margin shaped and placed as directed, then it is a logical deduction that the area which we are told is immune, is really not immune; in which case, extension in this direction is ill advised. The advocacy of non-cohesive for the gingival margin seems therefore to be a strange phase of the extension for prevention theory."

I wish to call your attention to the fact that not once in this

two-page editorial does the Doctor assert that any one made the statement that cohesive gold would not protect this margin; not once does he quote the man whose methods he is discussing; not one word of praise does he have for a method of demonstration which illustrates the proper and improper way of packing gold, so that no intelligent member of a large audience can fail to understand it.

The editor closes by asking if this is not a strange phase of the extension for prevention theory.

May I ask if it is not a strange phase of editorial writing for a man to accept, or at least deal kindly with the subject of cavity preparation as presented by one man, yet in the same article reject utterly the methods advocated by the same man as best adapted for the filling of such cavities, this rejection based on no more intelligent reasons than those set forth? I ask you, is it not strange?

It seems to me that the Doctor has consumed two pages of valuable editorial space in laboriously fashioning and building a man of straw whom he triumphantly knocks on the head in the closing paragraph.

The questions I wish to leave with you today, and on which I hope for the fullest open discussion, is whether or not these articles to which I have called your attention are of such material as the magazines, our professional text books, should be composed of?

DEFINITE VS. INDEFINITE METHODS.

BY DR. J. V. CONZETT, DUBUQUE, IOWA.

Mr. President, Members of the G. V. Black Club of St. Paul, Ladies and Gentlemen: The pathway of life is strewn with the wrecks of men who have started without definite plans, have lived an aimless existence and have died a hopeless death, and have left memories—if at all—that are “unwept, unhonored and unsung.” The successful man is the man who has had a definite fixed ideal to start with and has consistently held to that ideal through all the vicissitudes as well as fortunes of life and has given to that ideal the concentration of all of his talents and powers. It is the “forgetting all else” and the “this one thing I do” man that succeeds in life. There have been men such as Goethe and Herbert Spencer who were ten talent men and seemed to be able to comprehend and master all sciences and all arts, but the vast majority of the human race are one talent men, and if they are to develop that one talent they find that they must with all their heart, soul and mind seek that one thing. The successful man is the man who knows, and who knows that he knows. Not that such a man is an egotist, but that he properly appreciates himself, all the while understanding his own limitations. The physician that has the confidence of his patients is the one who shows by his every movement that he understands the case and that he has confidence in his ability to cure it. While, on the other hand, the physician who does not know is unable to keep from his patient the fact, and his indecision and lack of confidence in himself are soon communicated to his patient, who promptly and very properly dismisses him and calls in a man like the first one I have spoken of. The difference between the two men is that one is possessed of definite knowledge and knows it, while the other has indefinite theories and is not sure that he has even them.

The pathway of professional life is not a “flowery bed of ease” nor is the pursuit of knowledge an easy, though it may be a delightful task. But the goal held out to the earnest striver is that of success, while the reward of the idler is failure. Oliver Schreiner tells us of an artist whose technique was not of the best, but he decided

*Read before the G. V. Black Dental Club, of St. Paul, February, 1905.

that he was going to be a great artist, so he left all else and gave all his energies and his talents to his beloved art. Finally one of his pictures was accepted at the Salon, and though it was painted in monotone it attracted the attention of all who saw it by the brilliancy and beauty of that one color. Critics stopped and sang his praise and brother artists sought in vain for the secret of this one splendid color, and the artist kept on painting and giving to the world picture after picture all done in this wonderful color. But as he painted his form got thinner and thinner and his face paler and paler, until one day they found him dead beside an unfinished picture. When they disrobed him preparatory to dressing him in his funeral garments, they found a great jagged wound, which was scarred and seamed, from many a cut over his heart, and then they knew where he obtained his color. He had painted with his heart's blood. He had literally put his life into his work.

Gentlemen, we will be successful dentists when we are so bound to our profession by our love for it, that we will give to it our heart's blood, when we will put our lives into it. Not many of us are willing to pay the price and yet here and there great, noble men are giving themselves gladly, freely; giving their daylight hours to the work of their profession that loved one's may not want, and the hours that should be devoted to pleasure or sleep, to research and study, that the profession may advance. All honor to such men, and may the time speedily come when we as a profession shall say to such men, "continue your study and investigation, but do it at our expense; here is the money to take care of you and yours while you do it." There are still many problems to be solved in dentistry. There is still room for many earnest workers in fields as yet wholly or almost entirely unexplored, but much has been accomplished in past years, and in the past twenty years in particular. During this time dentistry has been raised from a profession of empiricism to that of an exact science. Again I say, all honor to the men who have made it possible. But while we have definite knowledge along some lines, and this knowledge is made use of by some men, it is a deplorable fact that to the large majority of the profession, judging by the operations that we see from day to day, this knowledge is not made use of. And so it behooves us, in justice to the men who have toiled to give us this knowledge, to keep on telling the story, to use definite methods in our

own practices, and to write and talk upon every possible occasion until the profession in general shall adopt the methods we know to be right, "for precept must be upon precept, precept upon precept, line upon line, line upon line, here a little and there a little." This is the justification of this society and a noble, a magnificent work you have accomplished, and it is the justification of this paper. For surprising as it may seem, I everywhere meet with the statement that "I use Dr. Black's methods and have done so for years." I say surprising, because as I see the operations that these men make I know that they have a very faint idea of what Dr. Black's methods are. In the space which I can devote to a paper of this description it is not possible for me to outline all the definite knowledge we have concerning the preservation of the teeth, but there are several points in our practice which I wish especially to emphasize, because I feel that through ignorance or carelessness they are points that are neglected by the profession in general.

First, there is that tremendous science of occlusion. In speaking with one of our foremost orthodontists recently, he said "that if the expert operative dentist, the expert prosthodontist, and the expert orthodontist could be united in one man, we would have the occlusionist." This coming from a man that had made the science of occlusion his life work, and who thereby acknowledged that he had been able to approach it but from one side, made me feel that it certainly needed more emphasis from the standpoint of the operative dentist.

We all know of Dr. Black's investigations concerning the crush-power of various individuals, and we know that the power exerted by the masticatory muscles of various persons varies from fifty to three hundred pounds, and yet we continually see fillings, inlays and crowns placed in teeth and upon the roots of teeth in such a manner that they are bound to fail, showing that the operators who made these operations did not properly study or did not properly understand the significance of the occlusion in the case indicated. Only a week or two since, a lady consulted me about the condition of her teeth, and I found upon examining her occlusion that the upper and lower incisors met squarely, end on end, and they had been in consequence worn down to a considerable degree. And yet, in spite of a condition so palpable, a dentist had made a porcelain inlay in the disto-incisal surface of the right central incisor. Of course, it was break-

ing down. A study of the occlusion in this case would have deterred him from placing a material as friable as porcelain in a position in which it would be subject to such great stress of occlusion.

Then, time after time, we find the mistake made of making a filling in a proximal surface of an incisor, involving the incisal angle without protecting the angle, even in cases where the occlusion is most severe, and as a result the fillings are soon lost, through a breaking down of the angle. Or, if an attempt is made to carry the gold over the incisal surface, there is too great a regard for the esthetic and not enough regard for the preservation of the tooth; there is but a small amount of gold built over the incisal surface, which the force of occlusion soon causes to flow a trifle, and we find our filling getting leaky and the tooth blue. There is no class of cavities that require more care in filling than these just spoken of, and none that call for more good judgment. I have frequently had fillings of that kind fail through an endeavor to please my patient by not showing the gold any more than was possible. I have, however, come to the conclusion that in the future, if my patients want those teeth filled, they must allow me to use my own judgment in the matter or I will not fill them. And my judgment will cause me to place gold enough over the incisal surface to resist perfectly the stress of occlusion, and I will save the patient's tooth and my own feelings.

Then, as I have pointed out in a previous paper, it is most important to study the abnormal excursions of the teeth. This is a most interesting study, and if you have not observed it you will be surprised to see the seemingly almost impossible positions people will throw their jaws into in order to grind upon some favorite cusp. If you have not noticed that occlusion and happen to fill that particular tooth without strengthening that cusp, you will probably hear from the patient in a day or two and will most likely crown the tooth in a short time. These are but a few of the points in occlusion to which I wish to call your attention, but your own observation will in a short time supply many more cases.

The point I wish to emphasize here is, study occlusion in its relation to stress upon your fillings. For years the profession groped about in the dark, searching for the cause of caries of the teeth. One cause after another was suggested only to be abandoned as untenable, until, with the coming of the germ theory of disease, it began to dawn

upon the minds of many men of the profession that here might be the solution of the problem of decaying teeth, as well as the cause of the other diseases that the human mouth is heir to, such as alveolar abscess, pyorrhea, etc.

Dr. Miller, of Berlin, demonstrated that the human mouth was a vast culture medium for all kinds of bacteria, both pathogenic and non-pathogenic, and later Dr. Leon Williams demonstrated that the decay of the teeth was caused by a micro-organic invasion and demonstrated the bacterial plaques. So today we know that if we could perfectly exclude bacteria from the mouth we should have no diseased teeth. We can not do this, but we can exclude them from the field of operation by the use of the rubber dam and it is our duty to do so. I feel that it is essential to use the dam in all operations on the teeth, for if we place a filling in a tooth that is reeking with micro-organisms of all kinds (as a tooth must be that has been excavated in the presence of saliva), how can we expect that tooth to remain in a healthy condition? But it is in the treatment of teeth that I wish to especially emphasize the absolute necessity of using the dam, and in the light of our present knowledge I believe that it is almost criminal to neglect to do so. Yet, as I meet with men and discuss this question and as patients come to me from other men and I make inquiry concerning the method of the treatment of a certain tooth, the fact is elicited, so frequently that it has ceased to be a cause of surprise, that the tooth was treated without the application of the rubber dam. No wonder that an abscess developed. The great wonder to me is, not that so many, but that so few teeth cause trouble after such treatment, and I have no other reason to assign than this, "nature is very kind to us." The application of the dam simplifies matters so wonderfully that I wonder that it is not universally used in all cases. When a case comes to you, place the rubber dam on the tooth, open into it, and it matters not what the condition is, you are in a position to properly treat it. If there is an exposure of the pulp you can devitalize without the fear that you have infected the pulp through the medium of the fluids of the mouth. If the pulp is found in a putrescent condition you are in a position to treat it rationally. In fact, whatever may be the condition of that tooth you are in a better position to treat it after you have the dam adjusted than you would have been had you neglected to use it. So

use the dam and you and your patients will be saved much profanity that is not elastic.

Time would fail me were I to attempt to speak about the definite knowledge we now possess concerning the proper preparation of our cavities. Extension for prevention, extension for convenience, shaping our cavities upon sound mechanical laws, etc. I must, perforce, leave those and other subjects to be taken care of in the discussion.

Passing over these very important subjects, I wish for a few minutes to discuss the introduction and condensation of gold in making gold fillings. Upon the introduction of cohesive gold the profession, in its delight, abandoned non-cohesive or so-called soft gold, that had been its sheet anchor up to this time. But, happily, there were those who remembered their first love and the use of unannealed or soft gold is again coming into use. In some places and under some conditions it can not be too highly recommended. In the gingival third of bicuspid and molars and in cavities in the occlusal surface of the same teeth it can not be equaled by any other material. I can not take the time to speak of the technique of its use, but only wish to speak of its advantages. In the first place, by reason of its non-cohesiveness, the plates of a cylinder are permitted to readily slide over each other so that nothing prevents a perfect adaptation to the walls of the cavity. There is no bridging or balling up of the gold by reason of one particle cohering with another, and a perfect moisture proof filling can be made with comparative ease. Then a filling can be made in one-half or one-third of the time that it can be made by the all cohesive method. Through using this method I rarely ever exceed one hour in making a filling in the mesio or disto-occlusal surface of a bicuspid or molar, and I am sure that it would take me three hours by the other method, so that in using unannealed foil we are making better fillings than we would in all probability make in any other way, and we are using up less of our own and our patient's vitality.

We have had definite methods of instrumentation in packing gold worked out for us, so that it is no longer necessary for us to wonder if a given filling is sufficiently dense to stand the stress of mastication, or to be anxious concerning its impermeability. We know, if we have observed and faithfully carried out the laws governing the same, that our filling is as it should be. In condensing our

gold, the plugger should always be stepped from the center of the cavity toward the walls and the last blows of the mallet upon a given piece of gold must be against the gold lying over margins or walls of the cavity. Then the pluggers must be held at an angle as great as 45 degrees with the floor of the cavity and toward the wall to which are are packing the gold, that the gold may flow beneath the point of the plugger toward and against the wall of the cavity. In this way a perfect joint will be made and one that we know will not leak if it is sufficiently dense.

There is, perhaps, no other thing in which the majority of men fail more than in condensing gold in making a filling. At a clinic, recently, I was asked to see a man make a gold filling, and I was told that he was a "cracker-jack," so I went and found him placing a filling in a large cavity in the mesio-occlusal surface of an upper molar. He was using a hand mallet in his right hand, gently tapping an instrument which he held in his left hand. The instrument was not in contact with the gold, but was passed over it and the blow of the mallet forced it down on to the filling. You can imagine the density of such a filling. We know the density of our fillings, for we know the exact size of each piece of gold that we introduce into a cavity, and we know just exactly the number of blows of the mallet that we give to each piece, and we calculate, as nearly as it is possible to do so, the force of the mallet blow, for we use a mallet of certain weight and length of handle, and an assistant that is trained to use the proper blow. Our gold is rolled into pellets of $1/64$, $1/32$, $1/16$ and $1/8$ of a sheet. To a 64th of a sheet we give twenty blows of the mallet, to a 32d forty blows, to a 16th eighty blows, etc., so that when our filling is complete the gold is a dense homogeneous mass that will receive and retain a high polish and it will withstand the stress of mastication.

There is but one other point that I wish to speak about and that is the knowledge we have gained concerning the interproximal space. We now know its function and its necessity. In former times it was ruthlessly destroyed by filing away the points of contact and letting the teeth fall together, to the obliteration of the interproximal space and the attendant discomfort of the patient. Our fillings should be so made that the points of contact will be perfectly restored and be in perfect contact with the point on the adjacent tooth. The con-

tact point should be small; as Dr. Black puts it, it should be as though two marbles were knuckled together. If this is properly done the filling will slope away from the contact points and the food, in its excursions over the teeth, will slide over the fillings away from the contact, avoiding the interproximal space, and it will not crowd in between the teeth. The gums now will advance into the space and we will soon find our space filled with normal gum tissue, which is as it should be. In finishing your filling, be sure that there is no over-hang to irritate the delicate gingival, or it will not properly perform its function. Many an otherwise perfect filling has been spoiled by this bit of neglect.

There are so many other points in which we have knowledge that is definite and exact that I have not been able to touch that I feel that this paper is most incomplete, and its title should be *Definite Methods in Relation to Gold Fillings* rather than its more comprehensive title of *Definite vs. Indefinite Methods*. But I must leave the knowledge we have of amalgams, cements, porcelains, etc., as well as the broad fields of *Orthodontia* and *Prosthodontia* to the discussion of those men who have been trained along those lines and who are more conversant with them than I am.

SOME REFLECTIONS UPON THE PROGRESS OF PORCELAIN RESTORATION.

BY N. S. JENKINS, D. D. S., DRESDEN, GERMANY.

So long as time endures there will be disputes as to the value of materials and methods; partly because language is, at best, but an imperfect method of communicating thought; partly because even able men do not always possess the gift of clear and logical expression and largely because mankind in general has a genius for misunderstanding.

Besides, there is an infinite variety of talent, so that no two men obtain exactly the same results in exactly the same way. Then there are minds so subtly constituted that they prefer the difficult and involved to the simpler and more evident method, and such men easily lose intellectual interest in ways that are too plain. Most difficult to convince is the man with the severely logical habit of mind, the

temperamental conservative, disinclined to the exercise of imagination, who has become eminent by working upon accepted theories, with an energy, persistency and concentration of thought which overcomes every difficulty in the field he cultivates, but which leaves him so complacent as to have little desire to seek "fresh fields and pastures new."

So every reform in dentistry, or in any other direction, has invariably to contend with imperfection of expression and with the mental and temperamental defects of its advocates; with the solid mass of entrenched conservatism, which, both by honest conviction and the sheer force of inertia, dispute and bar the way; with the ardent disciple who claims too much and with the reluctant convert who sees too little; with enthusiasms too intense to last, and with indolence too deep to move. But still in a multitude of counselors there is wisdom, so that, from the thoughtful criticism of the trained man of science to the peevish complaint of the unbalanced weakling, there may be much light thrown upon the path of progress.

These reflections occurred to me upon returning to take up the thread of my life, after a considerable absence, and reading connectedly my accumulated correspondence and the professional magazines for some months.

Within the last few years it is surprising how much, and yet how little, progress porcelain restoration has made. How much is evidenced by the practically universal acceptance of this method as being indicated in many instances. The most inveterate gold operator finds restoration in porcelain sometimes desirable, even as the most accomplished master in porcelain sometimes finds gold work indispensable. How little, is shown by the half-hearted way in which it is worked by many men who have not given themselves the trouble to learn its virtues, and who try to find, as, for instance, in gold inlays, some perverse modification of a system, which is, when understood, sufficient in itself.

At the very basis of making a successful restoration lies the perfect preparation of the cavity, and this is, in reality, a simple matter. The cavity must be formed so as to permit the faultless removal of the matrix. Let the operator study any cavity, and, unless he is incapable of straight thinking, he can always find a safe and certain way to obtain this result. It is merely a case of common sense and

mechanical ingenuity. Approximal cavities may often be advantageously formed with shelving walls, except upon occlusive surfaces, where the edges must always be straight for sufficient depth to give a wall of porcelain which will not chip nor break. With porcelain enamel a thickness of two millimeters is usually sufficient to stand the strain of mastication anywhere. "Edge strength" is simply a matter of first properly preparing the cavity so no weak edge of tooth or porcelain is exposed to stress. Secondly, of obtaining a perfect matrix. Thirdly, of solid fusing, and fourthly, of correct setting. He who slightes or neglects any of these conditions fails of complete success, but there is no excuse for such failure, for all these conditions are always obtainable.

Take an approximal-occlusive cavity in a molar. The edges on the coronal surface are usually thin and with numerous small cracks. With a large fissure bur these edges can be quickly cut squarely away until a surface is reached extending deeply enough to exclude all danger of subsequent fracture of the edges of the cavity through the force of mastication. This is all that is needed for porcelain. The thickness essential to prevent chipping or fracture in a cavity on the grinding surface of a molar is sufficient to prevent chipping or fracture in an inlay. For an inlay, the edges of an occlusal cavity must not only be made thick enough, but they must be made exactly perpendicular and with polished surfaces. That portion of the cavity which has not to bear the strain of mastication may flare as much as one pleases. Indeed, "extension for prevention" sometimes requires the cavity to be cut so as to form superficial lateral arms with very thin edges, but this may be done with impunity where no stress comes. Of course, somewhere there must be depth and strength sufficient for secure retention, but, given that condition and right-angled and sufficiently deep occlusive edges, the approximal edges may often be extremely attenuated. Every portion of the cavity, and in particular the edges, should be not only well shaped, but brilliantly polished. With small Arkansas stone-points a beautiful finish can be obtained, which should extend over the edges, giving everywhere, in the neighborhood of the cavity, a polished surface, from which it is easy to remove the matrix. It is folly to attempt making a perfect matrix against a sharp, uneven or rough edge, or to expect always to remove it, without accident, from a cavity around which rough surfaces have been left.

Of what should the matrix be made? For men of sufficient experience, nearly always of unannealed gold foil No. 30. There is now and then a cavity which, because of its extent or because of some unusual difficulty in removing the matrix, can be better managed with rolled gold No. 30 or gold foil No. 40. This is, however, a matter of judgment, experience and temperament. I have known very skillful men who found gold foil No. 30 too delicate for their use and who got better results with a heavier foil. It is important to have an exact impression of every part of the cavity. I have often heard platinum foil workers declare that they cared little for interior perfection of the matrix if the edges were intact. This recklessness is, however, only excusable in a man confident in his unusual skill. The strength and stability of the inlay is materially increased by that accuracy of fit to every part of the cavity which can be satisfactorily obtained with gold foil alone.

The matrix should be burnished. It is not safe to trust to pressure alone to remove folds or to get perfect edges. Besides, burnishing stiffens the foil and makes it easier to remove it intact. This is especially the case where gold foil No. 40 is used.

Every matrix should be imbedded in asbestos paste and it must be an asbestos such as America does not seem to furnish. Asbestos is a silicate of magnesium (Mg.S i O_3) and usually contains more or less calcium. Some, but by no means all, European asbestos develops, when ground to a certain fineness, varying according to the quality of the material, and mixed with water and subsequently dried by heat, a binding quality which seems absent from American asbestos. It shrinks evenly in drying, becomes fairly solid, with a smooth surface, and holds the matrix securely in position during the process of fusing the porcelain. This is a great advantage. Neither warping nor shifting of the matrix can occur. In various stages of fusing the cup, containing the matrix, can be turned in any desired direction, so as to inspect the work from any point of view, making it possible to obtain shape, contour and exact edges with absolute certainty. To return a half finished inlay to the cavity, to reburnish the edges, is a confession of inaccuracy of manipulation.

Not even by the aid of the pyrometer can one fuse, at a high temperature, such a small object as an ordinary inlay and be certain of always reaching and stopping at the point where the greatest

strength of the porcelain is obtained. It is seldom from underfusing, but more commonly from overfusing, that undue porosity and weakness come. For this reason, the advantage of the open gas furnace in fusing porcelain enamel is very great. It is not distressing to the eyesight and with but a little practice one gets the same results, without failure, every time, and the process is also a sufficiently rapid one.

No amount of instruction avails against the mental obtuseness with which one has occasionally to contend. I have known men, once taught the use of the small diamond disks for grooving inlays, to split the porcelain by dry grinding or to cut away until there was no substance left. I have seen men mix cement so thin that it had no binding force, or so thick that no power could press out the surplus. The question of cementing the filling is a very important one, and the investigations of Dr. Poundstone are suggestive, but not conclusive. My observation shows that failure is chiefly due, not to imperfection of the cement, but to defective manipulation; as in an illogically shaped cavity, or an imperfect matrix, resulting in an inlay which rocks in setting; or failure to apply a steady pressure until all the surplus has been pressed out and crystallization obtained; and only experience can teach a man how to mix his cement so it is best adapted to each individual case. Only patience can keep him constant to the principle of keeping up a steady pressure, through a wedge or some other method, until the cement has become crystallized beyond peradventure. But, granted that cements have all the defects attributed to them, the fact remains that untold thousands of porcelain restorations have been and are being made perfect in contour, exact of edge, with no joint appreciative to the unaided eyesight, and where, even with a magnifying glass, no evidence of cement disintegration can be seen, and which are accomplishing their purpose of preserving the teeth, with a perfection, as regards immunity to recurrent decay, comfort to the patient, and beauty of appearance, such as can not otherwise be obtained.

"THE BUSINESS SIDE OF DENTISTRY."*

BY F. W. HANCOCK.

The sharp distinction of a decade ago dividing wage earners into two great classes, business and professional men, is fast disappearing.

The barriers are giving way with the onward progress of both classes and they are merging gradually together. In the business world of the twentieth century, the business man must aspire above the mechanical, and must therefore belong to the professional class.

In like manner the professional man must, to be successful, be a business man. On every side we hear adverse criticism concerning dentistry as a profession, this, coming from men of integrity, whose word has weight in the community of the profession, by reason of intelligent and faithful effort to uplift that body, has worked havoc among younger members, leading them to think that the rewards of legitimate work are not commensurate with the efforts expended, thus leading them to try for the fortunes advertising parlors are supposed to yield. Some are restrained only by their fellow practitioners and the wish to appear before them in an ethical light. As a matter of fact the restraining force should be, first, from within, and second, from faith in business methods which in no way encroach upon professional ethics.

The following is part of an advertisement which appeared in a daily paper:

"SPECIALIZATION.

"No dentist's life is long enough to become an expert in all of the six branches of the profession. To become skillful in a single branch is a lofty ambition and only a few attain it. All my specialists are chosen from that few. Every man in my office is an expert in a particular branch. He must have received a broad general training in dentistry and then have achieved distinction in his chosen branch before I call him. He must be an expert before he comes to me. There is no 'if' or 'perhaps' about his skill when once you find him in my office.

*Read before Odontographic Society of Chicago, March 20, 1905.

"Just as important, my specialists are all men of character. I have ways of ascertaining this not at the patient's disposal. A good dentist may be ruined by dissipation, like any other man. Such a dentist can not stay with me. I don't believe my patients want him. I know I don't. My specialists are all in the prime and vigor of their powers, dentists who have made a keen study of their calling; not men who have picked up merely enough dentistry to earn a living."

We may safely accept this as a good advertisement for the reason that it was awarded the prize in a contest conducted by "Printer's Ink," a magazine devoted to that line of work, and yet the advertiser after sixteen years of experience must needs come back to the principles of the ethical practitioner for what passes as the highest in dental advertising. Manifestly, if he could have appreciated the value of the code of ethics as a practise-builder at the commencement of his career, he would never have violated it.

Is not this an object lesson in itself for the would-be advertiser? Does it not give him a more exact basis for comparison between the shadow and the substance?

One of the foreign delegates to the fourth International Dental Congress, in commenting upon the appearance of the different offices he had visited, stated that the occupants had amassed knowledge pertaining to dentistry to a surprising extent, but that they had evidently gone wild over material things to the utter neglect of the spiritual, which, from a business standpoint alone, was by far the more important. To give one's life to the science of healing and not appeal to the highest in humanity was, in his estimation, equivalent to discarding "gold for dross" in cultivating the power to influence the human mind. Evidently the laws of suggestion must be unknown to many dentists, if we are to be guided by the appearance of some offices. Could the owner of such a one see himself in the eyes of the intelligent patient, he would either conclude to have a scrupulously clean office or discontinue the practice of dentistry.

The public, through educational institutions, lectures, physicians and the press, are becoming educated to the proper observance of, and respect for, hygienic precautions. The advance guard of the profession in recognition of this sentiment, is car-

rying aseptic measures to extremes and making them important factors in daily practice, thus inviting comparison between present and past methods, to the detriment of the latter. In one instance I have known of two nurses, patients of a Chicago dentist renowned for his sanitary precautions, coming from a large city especially for dental work, affirming that it was easier than attempting to find a dentist in their home city who would approach the necessarily high standard set by the surgeon whom they had assisted.

The wish to help others is a perfectly natural trait. With this purpose in view, numerous dental societies have been formed with the result that a wonderful amount of good has been accomplished, but as yet less than 20 per cent of the dentists are affiliated. Strange as it may appear to the majority, this 20 per cent is dictating in a measure the methods and material the 80 per cent shall use.

When the dentist who insists on "flocking alone" is taxed with the fact he usually expresses himself as follows: "What do I want with dental societies? They can not teach me anything. I wish you could have seen some work in the mouth of a patient who came into my office the other day. It was done by one of your big society men, and if my student could not do better, I would send him back to the farm." If this thought is persisted in and its expression allowed to go unchallenged the author is bound to regard it eventually as a vital truth and an excellent reason for letting dental societies severely alone.

On the other hand we will suppose the conversation had been addressed to a dental supply man, who, realizing its fallacy and knowing the amount of good which may be accomplished for the individual, with the entire profession organized and working as a unit, takes up the gauntlet in behalf of the absent one and endeavors to foster a spirit of tolerance in his favor. If the latter is such a poor workman and his commentator such a good one, is it not natural for so good a one to desire to uplift his less talented brother? Once in this frame of mind, membership in a dental society would be simply a matter of time.

The dental supply man can become a valuable adjunct in the upbuilding of the dental profession by promulgating its ideals and showing the advantages accruing to the individual from such an affiliation. In this manner he would reach the selfish man on his

own ground, and possibly bring him to realize that he is standing in his own light and that popularity in a dental society is never attained without hard work, and can not be retained without considerable sacrifice of both time and money to the common good.

Political economy teaches that the relation of supply to demand fixes price. But to this, there is an understood corollary that fluctuations in price occur in exact ratio to the quality of the article. This particular line of reasoning does not always hold good, however, with dental operations, for the reason that they are not always subjected to intelligent criticism at the time of completion.

With one class of men this imposes a merciless task-master in the shape of his own conscience, with the other it proves the means of an easy descent to the Avernus of slipshod mediocrity.

Without the law of compensation as a guide, both classes are liable to arrive at the same conclusion, that there is nothing but a living in dentistry.

Viewed in a business light, fees weigh the balance with professional capacity, certainly, failures are recorded of men charging large as well as those charging small fees, hence the comparison with other professions to the disparagement of that of dentistry.

It may appear as if too much importance were attached to the question of fees, but I can assure you that it is, with the majority of dentists, a question of vital importance which, if brought before the dental societies more often, would result in an increased attendance.

Of the large number of dentists approached on this subject, all agreed that the present compensation for dental operations was ridiculous and detrimental to every interest of the profession, but contended that for their part they were powerless to remedy the evil, forgetting that nothing can be accomplished by accepting the inevitable and that the seemingly impossible loses its terrors as time passes.

From a close survey of the field of dentistry it would appear as if he who charges the highest fee, rendering in his estimation a just equivalent, is accomplishing more for the profession than the scientist, because he is making it possible for the scientist of the future to give more time and a clearer brain to his chosen field.

He also makes it possible for the low priced dentist of the present to charge a higher fee if he would only recognize his opportunity.

Men of intelligence and integrity, striving to serve the public faithfully by doing their work in the best possible manner, have retarded the progress of the profession they loved by failing to charge sufficiently high fees.

It is a common occurrence to hear men justifying their evident failure by referring to past and present conditions of dentistry, citing certain cases as proof positive, when as a matter of fact they prove nothing but that the principle of the law of compensation has been violated or ignored, but a new order of things has been inaugurated, and men who can figure the time and expenditure of both preparatory and present work are, in the phrase of the day, "making good," and they have no less love for their chosen profession on account of securing a fee worthy of it, to which they consider themselves justly entitled.

There is an axiom among those who market mining, industrial securities and the like, that dentists as a class are more easily satisfied in regard to profits and scrutinize a proposition less keenly than any other. From the standpoint of the dental dealer, this aversion to business methods is one of the chief obstacles to his success. Apparently he is possessed of the belief that a professional man is necessarily a poor business man and therefore not amenable to the laws governing ordinary mortals in business transactions. Inasmuch as the mind grows by what it feeds upon, this belief and the line of conduct engendered thereby, renders him less keen in his own behalf in deciding the question of fees, and in exacting his rights from the patient.

When we see leading business houses taking for their guidance the motto, "Do good and make money," and living up to the spirit and letter thereof, it does seem as if it were time for the dentist to do likewise.

Eighteen years of experience in the dental supply business compels the statement that the permanently successful dentist is he who has applied business methods to his practice and that the energetic man of character, doing his best, is a greater success than the one whose reputation rests on skill alone.

It is a fact that the man who is doing his best is fostering and

accumulating such powers of conviction as will enable him more easily to secure from twice to ten times as large a fee as his next door neighbor who is dominated by the fear that unless he accepts what is offered some one else will probably do the work under consideration for still less.

There is one real obstacle to the raising of fees, viz., it is regarded as unjust, but this view decreases in proportion to the increase in the age of the practitioner who usually regrets that he did not discover his illusion earlier in life.

Some of you will say, "My patients tell me that if I advance my fees they will go elsewhere." If such statements are accepted it must be admitted that in the play of mind on mind the patient has scored upon the dentist.

It will not do to advance the argument that patients will not pay. Patients can, will and do pay. But some of them are keenly alive to the fact that the dentists' financial methods are subject to reversion.

It will not do to say that people are poor. What would have become of the bicycle manufacturer during the craze if they had accepted such a hypothesis? If the so-called poor are educated to appreciate good dentistry, many of them will pay a good fee and make money at that.

If you will go over in your mind the methods of the last insurance, real estate, mining stock or book agent with whom you did business, and trace the transaction on your side along scientific lines, viz., attention, interest, desire and resolve to buy, you will understand that if this same science were applied to dentistry any fees which you honestly considered your services worth would be forthcoming.

A short time ago a Chicago practitioner advanced his fee for a certain line of work, for the reason that in comparison with other operations, the time and material expended thereon justified such an advance. Before arriving at this decision, he had accepted the price scale of his nearby competitor without question. This conclusion was reached after years of work and no objection was raised by patients. Why should the estimate of relative expense have not been made before? In other words, why should not the cost, profit

and selling-price have been figured on a business basis at the outset of the dentist's career?

I have frequently observed the young doctor after graduation start out to practice with but one idea in mind, viz., to do good work, the making of money being almost forgotten until pressing obligations demanded it be given first place. With the awakening, the young man is fortunate indeed if his faith in the "Golden Rule" remains unshaken.

Add a chair of business to the college curriculum, and the student will be better prepared to face real conditions, with greater faith in mind and character, than in his spick and span new outfit.

Governor Russell, of Massachusetts, is credited with saying to some college graduates, "Make a living, but remember there is one thing greater than making a living—making a life." Without question, the making of the dentist's life is an integral part of making a living, even when viewed from The Business Side of Dentistry.

THE REQUIREMENTS OF MODERN CROWN-WORK.*

BY HART J. GOSLEE, D. D. S., CHICAGO, ILL.

As a loyal and grateful member of this distinguished body, I tonight find myself confronted with a problem which compels me either to conflict with the urgent commands of your autocratic program committee, or else to inflict upon you somewhat hastily prepared views on a subject already well covered; and in the belief that charity and sympathy must logically increase in proportion as the relative numbers of the aforementioned respective bodies increase, I have chosen the latter course.

As a subject, the methods of substituting the lost or impaired crowns of natural teeth is doubtless to be regarded as next in importance to that of their preservation, and while it is of necessity a highly interesting topic, still, as pertains particularly to the more modern methods, it has been my pleasure to devote some little time, and to contribute some little thought, to it; and since much of this is of comparatively recent date, and also since most of my views have already

*Read before the Chicago Dental Society, January, 1905.

been published, I shall take the liberty of quoting more or less freely from previous articles, and particularly from one read before the Section of Prosthesis of the Fourth International Dental Congress held at St. Louis.

In this, as well as in other previous articles, I have made the statement that, "in view of the present methods for obtaining a maximum of all of the combined requirements incident to the application of artificial crowns, the continued more or less extensive employment of ready-made products is not indicative of the progress and advancement which the profession is making, and that such a practice was not in keeping therewith."

In this connection it occurs to me that the general and indiscriminate use of ready-made crowns by the ambitious and conscientious practitioner of today, may be likened unto, and is as deplorable a practice as would be the employment of the so-called "shot-gun" prescription by the modern physician, and I believe that the sooner the progressive practitioner arrives at this conclusion, and abandons the use of all forms of ready-made crowns—except, perhaps, in rare or occasional instances—the sooner will he be adopting more conservative and reliable methods; putting forth better efforts, and conserving to more permanent results.

In order that we may more fully appreciate the possible logic of these conclusions: that such efforts may be made, and that such results may obtain from our efforts, it is necessary that we should first carefully consider and analyze the requirements of modern artificial crown work.

As applied particularly to the ten or possibly twelve anterior teeth the requirements of a modern artificial crown constitute, in the composite, *first*, a range of adaptability which will make the application more or less generally universal, and at the same time offer every available opportunity for the favorably permanent protection and preservation of the supporting root; *second*, that it should be of porcelain and possess translucency and life-like appearance to a degree which will cause it to closely simulate the natural teeth; *third*, that it should be inherently strong enough to withstand the stress of mastication; and, *fourth*, that opportunity for repair or replacement in case of accident should be favorable.

It will be thus observed that while all of the requirements are

nearly equal in importance, one phase pertains only to the *mechanical*, while the other pertains exclusively to the art, or æsthetic side.

While it is true that a few styles of ready-made porcelain crowns are so constructed as to make it possible to achieve the latter or æsthetic requirements in their use, it is also equally true that their employment, in the usual manner of adjustment for which they are designed and intended, does not in a similar manner conserve to the former or mechanical requirements. Hence the principal advantage claimed for them—that of “simplicity of adaptation and attachment”—can only be regarded as an effrontery to the ambition and skill of that class of practitioners which are constantly and diligently striving for the *best*, rather than for the *easiest*, methods. And, indeed, it is this class of practitioners who are doing the most to elevate the profession and to make it possible for them, as well as others, to do better operations, and in turn to procure better fees for their services.”

In this connection, I maintain that no operator who makes a practice of inserting ready-made crowns, or who relegates this class of work to “dental laboratories,” has an honest right to aspire to large fees.

Because of inherent æsthetic qualities, however, ready-made porcelain crowns may be employed, but not in the simple and expeditious manner of adjustment for which they were originally designed, for the reason that this adjustment does not insure the maximum degree of favorable permanency which is demanded by the mechanical requirements.

As pertains to the class of requirements which have been and are thus designated in the composite as being *mechanical*, and upon which depend the protection and preservation of the root, and consequently the permanency of the operation, I desire to emphasize the importance of obtaining the very highest degree of accuracy in the adaptation of the crown; and assert that this essential feature may be accomplished only by conforming a metal cap or base to the exposed end of the root, and building the crown upon it.

Early recognition of this fact led to the construction of crown with a metal base adapted directly to the end of the root, and subsequently to the employment of a cap entirely encompassing a short projecting end. This procedure was advocated as a means of carrying the immediate joint between crown and root to a point where it would

be less accessible to the penetration of secretions, and thus more immune to their deleterious action as well as for the purpose of adding increased stability to the attachment between the two, and of insuring greater protection to the root.

The advisability of such a procedure has precipitated much vigorous discussion, and always been more or less of a debatable question, and the fact that it continues to be so regarded by many probably accounts for the extensive and continued use of ready-made crowns.

This question seemed logically debatable on the ground that the presence of a band often detracted from the artistic appearance of the crown by being more or less conspicuous, and further, and more important, that it almost invariably proved to be a source of irritation which induced gingivitis and subsequent recession of the soft, contiguous tissues.

The true cause of such manifestations, however, can invariably be traced to *mechanical* irritation, and it is my belief, that when these conditions do present the fault is not with the principle, but with its application.

Hence, I maintain that if the periphery of the projecting end of the root is properly and skillfully prepared—a procedure, however, which is usually performed in the most perfunctory manner—and then if a *narrow* band made of a gauge of metal sufficiently heavy to retain its given shape under the stress of fitting, is well and closely adapted to the sides of the root, and allowed to pass only a *short*, but *uniform*, distance within the free cervical margin upon all surfaces, so as to closely follow the cervical curvature of the gum, and offer no impingement upon the periodontal membrane, the presence of a band will offer *no* mechanical irritation, and the objections to this style of construction will thus be largely, if not entirely, removed.

In proportion, then, as these statements seem to be logical, the employment of a band in the manner indicated is practicable and warrantable, and in a large percentage of cases will afford a type of construction which will without question offer the most permanent results.

Where it may not be so adapted, however, its employment is contraindicated, and the adaptation of a simple plate to the end of the root will doubtless offer the next best means of conserving to this phase of the requirements.

With this conservative analysis of the respective requirements, let us now consider how they may be so combined as to be productive of the highest and most modern type of construction. In recapitulation, the requirements classed as mechanical demand, first, the construction of a well adapted base, and, second, the possession of sufficient inherent strength to sustain the stress of mastication; and those classed as æsthetic demands the employment of porcelain in accordance with the indications mentioned.

The advent and development of porcelain work; the recognition of its possibilities and limitations; the large range of adaptability of the compounds now prepared, and the improved facilities for their employment now at our command, make it possible for the progressive practitioner to now achieve results which combine both of these general classes of requirements to the highest possible degree, and to a degree not to be attained by any other method of procedure.

The special advantages to be obtained from the application of porcelain crowns lie in the artistic manner and facility with which the natural conditions and carrying characteristics may be closely simulated, together with the possibilities for relative strength as compared with other methods.

A brief outline of the detail of construction follows: The band—if one is used—should be *very narrow*, of 28 or 29-gauge platinum, and cut with surplus enough to make a *lapped* joint. If this is done it may be soldered with pure gold. The floor should be made of platinum, or iridio-platinum, not thinner than 32 gauge, and if placed in absolute contact with the edge of the band may also be safely soldered with pure gold. In fact, the construction of the entire cap, including the attachment of the dowel, may be accomplished with pure gold as a solder, providing *absolute contact* exists wherever union is to be made, and that it is then *thoroughly fused* until no surplus remains.

In the adjustment of the dowel to the root and cap, it should be observed that it passes through the floor at a point sufficiently to the lingual to preclude the surplus end from offering any interference to the proper adjustment of the facing.

The facing should first be so adjusted as to comply with all requirements and then ground to overlap the labial or buccal edge of the band. This latter precaution is necessary as a means of covering

this portion of the cap with porcelain and of securely sustaining it, which the æsthetic requirements demand.

In the attachment of the facing to the cap the pins should always be bent down well toward the facing, and brought into close contact with the cap at a point which will allow as much room for the porcelain as possible. Only platinum solder should be used at this point because a degree of strength which will sustain not only the facing, but all of the porcelain to be subsequently added, is necessary, and since we can not make a reinforced joint which will remain "reinforced" in the furnace, with pure gold, the employment of platinum is here imperative.

When the soldering has been completed all sharp angles should be nicely rounded before applying the porcelain, and in the latter procedure care must be exercised to pack it closely; to prevent overhanging edges and particles on the surface of the metal, and to avoid overfusing, and two "bakes" is usually all that will be required.

In conclusion, as the practitioner of today studies the status of artificial crown work, and becomes progressive, he must arrive at the conclusion that the employment of porcelain crowns constructed for the individual case must largely constitute the practice of the immediate future, and encompass the same sphere of general usefulness as the gold crown where it is indicated, and as we educate ourselves along these lines the doom of the "dental laboratory" will be sealed, and infinitely better results will be obtained.

PRELIMINARY COMMUNICATION UPON A NEW METHOD
OF DECALCIFYING STRUCTURES CONTAINING
MINUTE QUANTITIES OF ORGANIC MATTER,
WITH SPECIAL REFERENCE TO THE
ENAMEL.

BY C. FRANCIS BÖDECKER, D. D. S., BERLIN, GERMANY.

The extreme difficulty of producing correct microscopic specimens of the organic matter of the enamel has led the author to devise a new method of decalcification by which no part of the protoplasm is lost and in which all organic structures are kept approximately in their correct position. By the ordinary method of immersing a tooth in weak acid, every vestige of the enamel is torn off and washed away. Better specimens are obtained by decalcifying a thin section under the coverglass but even here only few structures are seen, and those badly* deranged.

The specimens to be treated by the new method of decalcification, which the author terms the acid celloidin method, are dehydrated and passed through a thin solution of celloidin. They then are placed in the decalcifying medium, which consists of a thicker celloidin to which six to ten per cent of pure nitric acid has been added. The percentage will vary constantly owing to the rapid evaporation of the alcohol and ether. For this reason it is best to use a vessel with a tightly fitting cover. Every two or three days a few drops of alcohol and ether should be added to keep the celloidin of proper consistency. The length of time required to decalcify a specimen depends entirely on its thickness. The author has decalcified very thin sections in two weeks, while a cross section of a bicuspid of 1-16 of an inch thickness, requires about three months. After having been in the acid celloidin for a day or two, the enamel assumes a chalky, opaque appearance. As decalcification advances the enamel becomes more and more transparent until it appears to the naked eye to have entirely disappeared with the exception of a delicate white line marking the outer boundary. When this stage is reached the celloidin is slowly allowed to harden and the block then cut out. Owing to the difficulty of obtaining celloidin sections thinner than ten to fifteen mikrons, the author

imbeds the celloidin block in paraffine in the usual manner and thereby obtains thinner sections more easily.

Two kinds of organic formations, besides the enamel fibres and other protoplasmic bodies described by his father in 1878,* were found by the author. The first of these formations are tuftlike aggregations of thicker fibres which start near the dentinal margin and pass outward. (See Fig. A.) The second are sheet-like processes which also commence at the dentinal margin and are directed

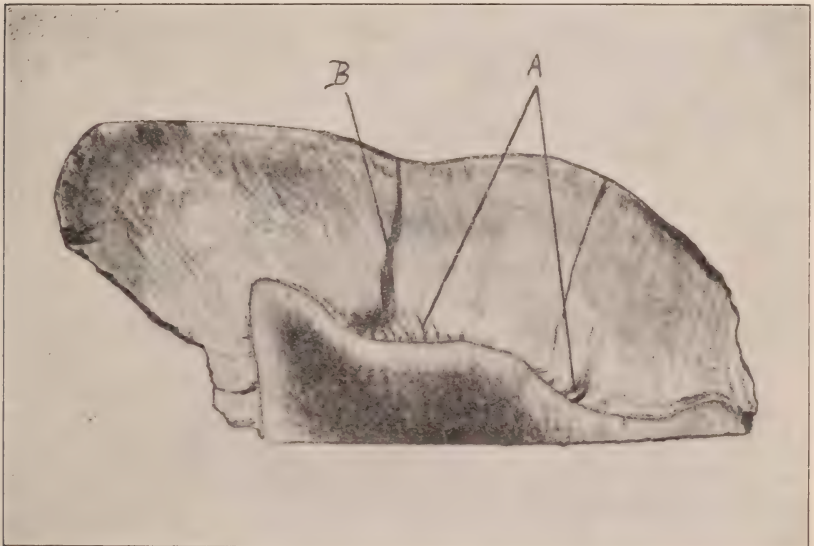


Photo-micrographs of a ground section of a bicuspid. X 18. A—Tuftlike structures. B—Enamel lamellæ.

toward the surface of the enamel. (See Fig. B.) They are somewhat undulating, corresponding to the general direction of the enamel prisms. These formations have never been described and the author suggests the name of "enamel lamellæ" for these bodies. These lamellæ have a striking resemblance to the checks in the enamel and were always regarded as such. They often penetrate the entire thickness of the enamel, while the tuftlike processes are only about one-quarter of this length.

The author is applying this method to the investigation of the embryology and comparative anatomy of the enamel and expects to publish the result in the near future.

*See *Dental Cosmos*, Vol. XX, p. 582.

PROCEEDINGS OF SOCIETIES.

THE ODONTOGRAPHIC SOCIETY OF CHICAGO.

A regular meeting was held March 20, 1905, with the president, Dr. F. C. Roach, in the chair.

Mr. F. W. Hancock read a paper entitled, "Business Side of Dentistry."

DISCUSSION.

DR. JOY L. FRINK:

Mr. President: Following the usual procedure, I will say that Mr. Hancock has prepared a very fine paper. It shows a great deal of thought, study and research, and the profession owes him a debt of gratitude which it can never repay.

But this great subject—the business side of dentistry—how it seems to overshadow all other subjects at certain times—rent day, for instance. There is another time when this question appeals with the greatest force, and that time is when the eye has grown dim, and the hand has lost its cunning and can no longer perform the operations it did in days gone by.

I do not agree with Mr. Hancock regarding the dividing line which he said was disappearing—between the business and the professional man. I think the business man still lacks many of the traits of the professional man, and the professional man has no traits of the business man, unless he has had previous business education before entering the profession.

Mr. Hancock speaks of cleanliness in the appearance of the dental office. There is a great deal of difference in cleanliness. The average dental office is cleanly, scrupulously clean in all its details. I do agree with Mr. Hancock, however, that it is only the advanced guard of the profession that has taken up the matter of surgical cleanliness in the way it should be considered.

Mr. Hancock speaks of 20 per cent of dentists who are members of societies, who he said dictated to the other 80 per cent. It is not strange that this small percentage should dictate to the vast body of dentists. It is not strange, because the profession depends upon a few men to do the leading: most men *are* followers, and this is true of members of the dental profession. While it is also true that 80 per

cent of dentists do not appear at dental societies as members, yet they study the proceedings of societies from magazines, and are really benefited as much, perhaps, as the other 20 per cent.

Speaking of membership percentage—the Illinois State Dental Society, through the *business* efforts of a few members, a dozen or so principally Chicago members, this State Society has increased its membership to 40 per cent in one year, and it looks now as if by the end of another year the membership will have increased to 60.

Mr. Hancock draws a very good picture of the dentist who does not belong to any society. I have seen this dentist a great many times in his office, but he is not such a bad fellow, and he will soon feel the effects of the business campaign that is now being waged in this State, and being followed by other States, and will ultimately become a member of a society.

If you will just compare the meetings of dentists and the meetings of business men—merchants' societies, manufacturers' societies, laboring men's societies—you will readily see why there is so much comparative poverty in the dental profession. When the laboring men meet in a body, the only thing they discuss is, "How can we have our wages increased?" and "How can we get more from the people?" When members of a trade society, a merchants' society, or manufacturers' society meet to discuss questions, the principal object aimed at is how to get the most from the people. On the other hand, at meetings of dental societies the entire time is taken up with the questions, "how much we can give to the people," not how much we can get out of them, but "how much we can give to our patients; how better we can serve them."

Mr. Hancock speaks of supply and demand. There is no question that the supply of dentists is much larger than the demand at the present time. I saw some statistics not long since which were considered authentic, giving the increase of the different professions, and it was stated that the dental profession had increased in ten years more than law and medicine combined—very much more.

I do not agree with Mr. Hancock in the matter of fees; neither do I agree with the sentiment that was discussed at a recent meeting of the Odontographic Society regarding fees. The fees are large enough. I do not think that the fees ought to be increased. I think

there are more dentists who fail from charging large fees than there are from small ones. There are two extremes in the human family that will never trouble the average dentist—the very rich, and the very poor. The great mass of dental patients is made up of the middle class—clerks in stores, members of other professions, merchants, mechanics, etc., who can and will pay only a moderate fee. Therefore, it is only about 5 per cent of dentists who will ever meet any of these large fees, because of the fact that there are only a few who pay these large fees, and then—it is much better to work all day (because work brings happiness) than it is to work a couple of hours in the week, and then wait for the next big man to come along.

Mr. Hancock, in a vague sort of way, said that the dentists were poor pay. A very large percentage of dentists are slow pay—are uncertain pay; and do not pay on the day they say they will. If you will pardon a reference to the business house with which I am connected, I will say that we have been in business for eleven years: in that time the volume of our business has aggregated a million dollars. We have charged off to bad accounts \$5,000, which is only one-half of one per cent, and that is a small amount of loss. Therefore, I say the dentist is honest and will ultimately pay. This percentage of loss will compare favorably with almost any line of business. Possibly one-half of one per cent has also been expended in postage, statements, sight drafts, etc., but even 1 per cent is very small. The reason for this is because the dentist is not a business man, and does not make his *own* collections. If he did, he would pay promptly, because there is no man who will let his money go easier than the average dentist. The average dentist keeps silver money in one pocket and paper money in the other, and when he has no money in either pocket, he says his cash balances. (Laughter.)

I read a paper recently, written by some dentist in Ohio, in which he stated that the reason the dentist was poor was because the profession had a tendency to develop a taste for art. My opinion is that more dentists go broke on booze than art (Laughter), and the dental profession compares very favorably in that respect, because there are few drinking men in the profession.

The man who lives within his income has happiness, or at least contentment, but he who lives outside of his income is like being in General Sherman's definition of war.

Mr. Hancock suggested that dentists should not be so anxious to speculate in mining and other stocks. I venture to say that there is enough money lost in mining and other stocks by dentists to found a home which would care for every indigent dentist in this country. There is no question about that. One more point—there is a tendency to overcrowding in the large cities, to the detriment of the dental profession. A dentist in a little town of about two thousand inhabitants told me he wanted to come to Chicago. He said his opportunities were limited there; that there was no room for his talents in a small town; there was not enough money there. He said to me, "Do you know, Frink, I can only save a thousand dollars a year?" He came to Chicago and located, and a thousand dollars looks to him now as big as the Masonic Temple. I have met dentists in every part of the country—North, South, East and West—in the large city, and in the small town, and it is still my opinion, based on observation, that the dentist is about the finest fellow I have ever met. (Applause.)

DR. J. N. CROUSE:

When a patient comes to me, my first consideration is how I can best serve him, and not how much I am going to get out of him. If I can establish the fact that I am serving him well, I never have any trouble in obtaining a proper fee. The operations which a dentist has to perform are most tedious and exacting, requiring not only ability, but a great expenditure of nervous energy, so he should be very well paid, but as a rule he is not, and it is usually his own fault. A few men have the courage to charge what their work is worth, and theirs is the only influence to educate the community sufficiently that the average dentist can make a living. When I first came to Chicago I had hard work at first in building up a practice and my finances gradually diminished until they were very low. About this time a man visiting the hotel where I was living was sent to me by the proprietor and he asked what I would charge to put in a large gold filling where the tooth had been broken away and the original filling had come out. I told him \$50, and he had me go ahead with the work. When he paid me he said that he had been to one of the oldest and best known practitioners in the city, and that he had quoted him about \$10 for the work, and that the reason he came to me was because he did not think a good filling could be made for that price.

as he had paid \$40 to have the same tooth filled originally. Much as I needed the money I did not haggle with him over the fee, and this was undoubtedly the reason why he gave me the work. Dentists have not a great deal of business ability to start with, and the practice of dentistry has a tendency to dissipate what little may be there, consequently, it behooves every practitioner to pay especial attention to this matter of fees.

DR. TRUMAN W. BROPHY:

I think the dentist is just about as good a business man as most professional men, save, perhaps, lawyers, and speaking of lawyers, I think statistics will show that the average income of the dentist is a little larger than the average income of the lawyer and of the physician. Dr. N. S. Davis took pains to write a paper and discuss this subject, and he found that the average income of the dentist at that time was a little over \$1,400 a year, while the average income of the physician was about \$1,000 a year. It is a remarkable fact, which very few people in our city seem to know, that there are more lawyers inside of the limits of the city of Chicago, with two million population, than there are in the British isles, with 36,294,000 people. London, with its seven millions of people, and the other great cities of England and Ireland and Scotland, and rural districts, have fewer lawyers than Chicago. Statistics show that fact.

Dr. Frink spoke of the excellent advantages and opportunities offered by the practice of dentistry. In a paper read at a meeting of the Southern Dental Association, at Memphis, Tenn., week before last, a statement was made to the effect that the increase in demand for dental service within the last twenty years was something like 15 per cent. I have often made the statement (and I do not hesitate to make it again) that there are not 20 per cent of our eighty million people who employ dentists except when they suffer to such a degree that they can not stand it any longer, and then they seek dentists to have their teeth extracted. There is not over 20 per cent of the eighty million people who employ the services of dentists for the purpose of preserving the teeth. The other 80 per cent do not have the services of dentists, and it is from this large per cent that progress has been made in the last twenty years. There is no question but what the percentage has increased a great deal.

The teaching of the subject of bacteriology in the last decade

has awakened a new interest in dentistry, has brought to the attention of the medical profession the importance of carrying out prophylactic measures within the oral cavity, and this has led naturally to an increased demand for the services of dentists. The physician who is educated today knows that it is necessary, in order that the health of his patient may be preserved, to have the mouth kept in a clean condition, and as near surgically clean as it is possible to get it. Hence, when the mouth is the greatest of all centers of infection, in order to treat his patients successfully, the dentist must make use of methods to bring about as nearly as possible a state of cleanliness within the oral cavity; otherwise, he knows his patient is poisoned by the direct absorption of decomposing substances within the mouth, to say nothing about disregarding the substances that pass into the alimentary tract and go on through it, causing more or less disturbance. These are facts, and it is one of the reasons why there is a greater demand for the services of dentists. The physician knows that a mouth filled with broken down, carious teeth is not in a cleanly condition, and his patient can not be well with such a mouth. He knows that his first duty to his patient is to put the mouth in a clean, healthy condition. And so the physician of today seeks the services of dentists, with a view to caring properly for his patients. The physician comes in contact with a greater number of people than the dentist by reason of the nature of his calling, and, going into families, he is capable of accomplishing so much in bringing about a hygienic condition of the oral cavity.

When we begin to talk about business matters, the best service the dentist renders to his patients is that from which the patient receives the greatest benefit, although the dentist may receive almost nothing in the way of compensation. The dentist himself is to blame for that. There is not a man living in this community, who is engaged in the practice of dentistry, or in the Northwest for that matter, who has not been benefited by the lives of the men who have preceded us. When we mention the names of Allport, Cushing, Dean, and other great men, members of the dental profession of this city, and consider the work they did in upholding our profession, in establishing fees, for the services they rendered, and every one of us today profits by the experience of those men. They made it possible for those coming after them to receive more nearly

what their services were worth. Dentists do not receive what their services are worth oftentimes.

Dr. Crouse spoke of treating a tooth that had pulp nodules within it. What is the use of a professional man taking a patient like that, perhaps seeing him two or three times, as it is sometimes necessary to do, to prepare the tooth for the reception of a root filling, and to fill the cavity in a tooth of that kind? What would be the use—where would be the justice in a man making a fee, as he sometimes does, for filling the root, filling the cavity in the tooth, and then doing all the treatment for nothing? As a matter of choice, I would rather put in a filling, if necessary to do one thing or the other, and receive proper compensation for the preparation of the root, the removal of the nodules or secondary dentine, and getting out this mass of highly organized matter. That is where time and skill and effort come in, and I am sorry to say that the rank and file of the dental profession today receive patients whom they advise in consultation, give up their time and effort and tell them what to do, and perhaps treat them, and if they get any fee at all, it is only a pittance; it is nothing in proportion to the fee which is proper for the character of the service rendered. That is where the greatest mistake is made. Dentists treat patients who come and go, and when a bill is rendered it is simply for the filling of a tooth. That is the smallest part of the work in many instances. I often wish I had had some business training before I began the practice of dentistry, as it would have done me good. A great many men receive such training by hard knocks and by studying what other people do. I realize that if I had had the training the two gentlemen have had who have presented the subject so well tonight, and employed the methods they do, making out bills the first of each month, regardless of the progress that is made with a particular patient or patients; if I had taught my patients that this was the proper thing to do, I would be much better off, and in some instances I would not have lost accounts I have lost. It is the proper thing, although we do not do it. There is no reason why a physician or dentist should not make out his bills as regularly as a business man does of gentlemen who have accounts with him. The dentist usually waits before rendering his bill until everything is done, and he has an idea that that is the proper thing to do. I do not think that

is right. The dentist, in order to pay his bills, should adopt business methods. I feel as Dr. Crouse does when it comes to financial matters. I have a secretary who makes out and collects bills. In Europe the secretary of the dentist does all that, and it is considered the proper thing to do. I would rather do anything than to ask a man to pay me some money. I do not think a professional man should be called upon to do that. There should be a better way. When he has done his duty, and done it well to his patient, the patient should naturally do his duty, and do it with the same interest that the professional man does his duty to him. I think the physician is just as careless in these matters as the dentist, and that is the reason why so many have difficulty in getting along. Professional men in our country are not educated to look at the business side as they are abroad. Abroad they are educated to business methods. I must confess that the average foreigner in the dental profession is a better business man than the average American dentist. He has method about his business which is done by the secretary, and business is transacted just as regularly and methodically as in a counting house. Business is done on strictly business principles and that is the thing to do. I believe we should train dental students in regard to business methods. It should be a part of their curricula. I think all the dental schools of the country should have a course given on business methods. The difficulty with the young man in going out to practice is that he has not the slightest conception of what to do. He thinks he should charge a patient about what a patient pays at the college for fillings. This won't do. He should start out on the proper kind of basis, and make a fee equal to the character of the service rendered and the time spent.

DR. GEORGE W. SCHWARTZ:

This paper on the business side of dentistry seems to have resolved itself into a question of fees. The dentist out in the country can afford to work for less than the man in the city, with enormous expenses. He can live cheaper and if he is married he can keep a family cheaper; he can have luxuries which the country affords cheaper, and can save possibly a thousand dollars out of an income of two thousand dollars a year. This reminds me of a young man who some time ago spoke to me about coming to the

city to practice dentistry. He is practicing in a little town of six hundred inhabitants, not far from Iowa City, and he said he wanted to locate in a bigger place. He wants to locate in a place where he can make some money and save some. He said to me, "I am in a place of six hundred people." He showed me some beautiful work he did, and he said he did not have the facilities for doing as good work as did dentists in cities. I told him of the various appliances he could have and what they would cost. I asked him how much he made a year, and he replied that he made \$3,600 last year. I asked him how much he saved of that, and he said \$2,000. He showed me a photograph of his wife and one of a beautiful baby. He said he was happy. I told him that he had better go home and butt his head against a stone wall and stay right where he was, and added that if he was happy now, he would never be as happy if he practiced in a large city. He told me what his fees were. They were \$10.00 for crowns, or something like that. As to the question of fees in the city, very few dentists can afford to work for less than they usually charge as they have big office expenses, and some of them large families to support, and perhaps fashionable ones. These things really adjust the matter of fees. The question of fees depends on one's confidence he has in his ability to charge and collect large fees when he has done expert work. A lot of people spend their money on automobiles, on horses and carriages, and when they do these things it demonstrates that they have money, and they can afford to pay dentists good fees for their work. To a certain extent, I have no doubt it is possible for dentists to pick their patients and do a select practice. in this way obtaining good fees for all the work they do. The trouble is, however, that many dentists do not know how to charge for their work; they do not figure how much time they have devoted to certain work; they do not figure what certain work is worth to them. They have a mistaken idea that it is worth so much to the patient. They should not be afraid to charge good fees for first class work. I do not know of anything better that can happen to a dentist than to have a patient or two leave him occasionally and go elsewhere to have dental work done. Why? Because that patient will tell everybody that Dr. So-and-so did work for her and charged her so much that she would not go back to him. I

believe that kind of talk is likely to bring patients to dentists rather than otherwise. If dentists did their work on strictly business principles, paying their own bills promptly, and asking patients to do likewise, they would get businesslike people to deal with. Business people like to deal with a business dentist. Good people do not like to employ a cheap dentist. For a good many years I was a cheap dentist, because I thought I would have to be. I came to the city from the country, and thought the same prices I obtained from country practice would do for the city. I worked on for a time, and wondered what was the matter with me. I finally decided that it was not the fault of the people, that they had the money, and could afford to pay me much larger fees if I charged them. I then and there made up my mind that I was going to stand pat on securing better prices for my work. I needed the money, and it was not long before patients began to come to me.

There is a good deal of contention as to whether or not we should discuss fees with our patients. A great many people like to know what it is going to cost them to have certain work done. Not long ago a patient came to me to have a piece of bridge work put in—a three-tooth bridge. Another dentist sent her to me to have the work done. I made an appointment. Before she left the office I casually said, "Of course, you wish to know something about the price?" She said, "Yes." I told her what this bridge would cost. I would rather have had that woman go out of my office and lose the case than to have had a dispute about the bill afterward. I stand pat on these things, and let patients know beforehand about what it is going to cost. When you do this, they know you are all right. But perhaps only five per cent of people can afford to pay good large fees for dental work. In discussing fees with patients, you should know how to suggest why they should pay these fees. For instance, a woman comes into your office who wants a crown put on. There are a good many prosthetic men who get from \$65.00 to \$75.00 or \$100.00 for a porcelain crown; but if you ask \$50.00 or \$60.00 for so much treatment of the teeth, such patients are shocked. They wonder why this is. There are some women who think nothing of paying \$125.00 for a gown, or \$20.00 or \$40.00 for a bonnet, and the dentist should reason in this way, that if they can afford to spend so much money for dress and bonnets, they can

afford to pay him a good fee for expert work. I do not hesitate to tell a woman who spends so much money for a gown or a bonnet, if she disputes a legitimate fee with me, it is better for her to do with a bonnet less and have her dental work done, which is equally as important as a new gown or a new bonnet. There are several lines of argument one can adopt to convince people that they should pay reasonably good fees for dental work.

I took up the course of science and salesmanship from which I obtained many valuable points. After I read a little of that course, I got my pencil and figured out differences in prices, and found out where I had lost and had made mistakes, but where I could have made money. I apportioned everything out as taking so much time, and for which I should get so much money, and I then doubled my prices for crowns. I thought, at first, that some of my patients, who had formerly paid me \$25.00 for crowns, would leave me and go elsewhere if I charged them \$50.00 for crowns. Some of them did, but others are still coming to me. The secret of charging good fees is in standing pat on what you say. Of course, you must treat your patients kindly, but be firm and gentle, be systematic, and it will work out all right. All of your patients will not leave you because you increase your fees. A dissatisfied one will leave you now and then, but the majority will come back to you even though you have raised your fees.

DR. C. P. PRUYN:

We have all been entertained by this excellent paper, and Dr. Frink has discussed it in an able manner, as have also the other gentlemen who have preceded me. Some of the points that have been touched upon might be elucidated a little more fully than they have been, and one is with reference to giving proper credit to the men who have been leaders. When I think of such men as Cushing, Allport, and Dean, not to mention some of those who are now living, particularly those men of the past who have made it possible for you and for me to do what we do today; who have made it possible for us to operate so much better today than we could have done if it had not been for those men, and who have made it possible for us to charge the fees we do, I can see how much they have helped us, and all honor should be given to them, and whenever I hear a young dentist or an old dentist speak disparagingly of those men, and say

that they were robbers when it came to the question of fees, I feel such men are a disgrace to the profession. (Applause.) I have never known of a dentist, who was a good, honest, square dentist, who did not try to do the best he could for his patients, and whose first thought is, How can I best serve my patients? Those are the men who get the best fees. Such men as that try to do good work and charge accordingly. We should stand by the men who have made it possible for us to do the square thing. When a professional man renders expert service to a patient, he should be properly remunerated for it. The first thing for the dentist to consider is, not the business part, but the true professional man will ask himself the question, How can I serve this patient best?

I knew Dr. Schwartz had some ideas along this line, as he talked to me about the subject some months ago. There is a book entitled, "The Science of Salesmanship," and I judge that this little book is a good one for every dentist to read. I want to get it and get some pointers. We all need pointers. We need to be properly paid for our services.

There is one other point that was touched upon briefly, but not sufficiently, and that is in each college there should be a number of lectures—say, half a dozen lectures—given during the course on business methods for dentists. If Dr. Brophy inaugurated such a course as that, it would be appreciated by the students of the college with which he is connected. Students of dental colleges complain every year that they do not know what to charge. They go out to practice, expecting to charge the mere pittance for work that is charged in the dispensary. This is all wrong. Students in dental colleges should have instruction in regard to business methods. They would appreciate it, and if Dr. Brophy advertised it in the dental journals, and in the announcement catalogue he sends out, it would be a telling point with the young men who come as students.

A word or two more, and that is with reference to the character of the service performed. Let us professional men have that in mind continually—to render a just service every time a patient comes to us, regardless of the fee he is charged. Let the influence of this society be known; let it go out to the world that we are trying to render the best service possible to our patients, and are not trying to get all the money we can out of them. We should render the best

service it is possible to perform, charge a proper fee for our work, and do business on business principles. Above all things, don't get in debt; don't get in debt.

DR. C. E. BENTLEY:

There is one phase of this subject that has not yet been touched on. The whole subject, so far as it has been discussed, has been reduced to the question of fees. If I understood the principal purport of the paper, it had a relation to or significance of a difference between the material and spiritual development. If there be a line of demarkation between the business and the professional man, it rests upon these two foundations. It is true, as has been stated, that as a class the professional men are not good business men. That is a logical consequence. The professional man, from his early manhood to the time of his mature development, has been engaged in professional and technical acquirements, his professional and technical efficiency, largely at the expense of his business efficiency; and yet it is quite necessary in this strenuous life of a material age that the professional man should have something of the business side developed, and it is and can be developed along the lines that have been suggested in the paper, namely, through the spiritual development.

Reference has been made to Sheldon's School of Scientific Salesmanship. It has been my good fortune within the last forty-eight hours to read the third lesson of this splendid course, which I commend to you for serious consideration. The whole burden of Sheldon's argument is on the development of the spiritual side of man in order to make him a better business man. I take it that the professional man does not necessarily have to be skilled in the technical business methods of a business man to be professionally a business success; but I take it that a man who can develop what is called the spiritual side may make a business success as a professional man. What is the spiritual side? Without attempting to anticipate what you may read of the Sheldon course that has been referred to, it resolves itself into one of two words, either character or personality.

When Dr. Cigrand read his paper several months ago, I had something to say of personality, and it is germane at this time. I claim that any man who has a pleasing personality, who has an attractive personality, will have no trouble with the business side of his

profession. It was exemplified by the man who went to a competitor of Dr. Crouse and said he would charge \$10 for the filling. That man doubtless had a repulsive personality. It was not the fee that repulsed that man, but it was the dentist's personality. We all know the personality of Dr. Crouse. He has an aggressive personality that is attractive, as you know. It was personality, that subtle force, that subtle something that attracted the man to Dr. Crouse and caused the man to pay cheerfully \$50 for what he had refused to pay \$10. It was not the fee. I affirm that this question of personality is a larger thing than one can at first glance comprehend. Personality is the accumulation of all of the things that have gone to make the character of the individual, poured into and upon the technical or professional calling that you have in hand. Any man can acquire technical knowledge and skill sooner or later to practice his profession intelligently, but a man who only has the technical skill without an attractive personality is a man who sooner or later fails in his profession. This is seen in all walks of life, in all professions every day—men who are technically perfect, yet who are absolute failures, so far as business or the material accumulations are concerned. On the other hand, we see individuals of mediocre technical ability, but with attractive personalities, with sturdy, forcible characters, who attract rather than repel people, and these men are business and professional successes. It is the development of the spiritual side along with the material, as was enunciated in the paper, that will make a professional man a success in a business way.

It would be folly for me to attempt to tell this body how that might be obtained; it would be presumptuous, but if you will pardon me, I will say that the development of character is one of those subtle things that either adds to or subtracts from our life in every day of the year. Whether humble, exalted, or debasing—these integral factors add to or subtract from your character or from your personality. The association with people, the reading of books, vicious or good, are detractors from one's character or personality. In short, one's character, one's personality, is reflected in every act and in almost every look, and in every deed he does, and in proportion as that character and that personality reflect the good and the noble, in proportion is that man able to rise above poverty and able to make a success in a profession. The development of personality and the

development of character are as necessary as the development of skill, and he that has the force, that has a draft upon eternal verities, who is able to build for himself eternally character, is the man who is going to make a success.

A recipe for character as one says—

“We rise by the things we have mastered and placed under our feet; by the passions slain and pride deposed. For in the building of that eternal structure called character, the two greatest elements are the power of the will and the power of self-control.”

DR. B. J. CIGRAND:

I know that the paper we have heard this evening was somewhat evolved from the magnificent time we had in the discussion over my paper some weeks ago. I am very glad, indeed, to have had the opportunity of listening to Mr. Hancock's really very important subject, splendidly treated. I am very glad Dr. Bentley spoke as he did. The whole matter of fees is largely a question of individuality, for this stands for a distinctive personality. Call it personality, call it spirituality, call it character, call it neural energy, call it hypnotism or psychological influence, call it any old name you please, it resolves itself into the word individuality, meaning a qualified personality. I know I have experienced, and I am satisfied every man in this room has experienced the same thing in meetings, in large audiences, that when you meet a real man you know it without anybody telling you so. What is it? How does he express this? Is it neural energy, is it psychic influence? I do not care what it is, whether you call it the spiritual side of life, or whether you read the facial career—whether you call it anything you choose, somehow or other you will know it when you meet it, and I believe it is individuality. I have found this true in my own life: I have gone into large parties of men and after being introduced and mingling with them, I isolated the real men without any man telling me anything of their past career. I believe the face proclaims the career—the face is a map that indicates the high and low lands. There was something that said to me, “You have met a man, a personage,” and something drew me closer to him and made me linger in his presence, and what is true of a man is true of woman. I believe in the old statement of General John A. Logan, who said, “I do not care what a soldier's past career

has been; I do not care how well he comes recommended to me; I want to speak to him, and I want to see his face myself." It is the same thing that Abraham Lincoln recognized, when he said, "I will not appoint a postmaster to an important trust, or appoint a man in my cabinet, or to my official household, unless I myself have shaken his hand and looked him in the eye." Recommendations are all right. I like people to recommend patients to me. But I tell you we should be able to convince a patient in a moment or two or never. I would rather convince them that I am their dentist and can do good work and am deserving of their confidence, than to have a hundred of them come to me because they are sent and are under the influence of others. I do not talk to people about dentistry. I strive myself to guard against talking on any subject pertaining to dentistry to my patients. I think it better to divert their thoughts and let them be unconscious of the presence in my office. The matter of character, too, is an equation. The whole thing resolves itself primarily into the one thought that we must cultivate character and have individuality, but you may call it personality or by any name you please, the possession of neural energy is all important. You need not talk fees to patients, only when you expect a large sum, then get a complete understanding; you can charge for your work and they will pay the bill, but you must be earnest in your work—be wedded to the task. This determination—to do right—emphasizes itself in your face, voice and manner; this begets confidence and this is essential to obtaining liberal remuneration.

DR. HART J. GOSLEE:

I have very little to say upon this highly interesting subject, and yet do not want to overlook the opportunity of adding my tribute of praise to the excellent, interesting and instructive essay to which we have listened, and also to the discussion which it has elicited. The discussion, however, has digressed somewhat from the subject of the paper—the business side of dentistry—and we have been talking about fees.

In regard to the business side of dentistry, I believe all recognize and appreciate the fact that we are not good business men, as a rule, and hence the first thing we should endeavor to develop is a knowledge of how to conduct the business side of our profession.

In this connection it has occurred to me—in line with what Dr Brophy has suggested—that it is rather strange that professional men, be they physicians or dentists, do not dare to present their bills until their services are finally completed. I do not do this myself, and know that many of us do not, but it is reasonable and even consistent that we should present a monthly statement, whether the services are completed or not, because all business houses of any character or size do so with all their patrons, irrespective of their financial standing.

I am pleased to have had attention called to the book referred to by Dr. Bentley. Make it a point to look into it, as I believe it will aid materially in the development of better methods in the conduct of our business. If we develop better business methods, and so cultivate our character as to inspire confidence in our patients, we will have little or no difficulty in the collection of fees proportionate to the character of the work which we accomplish.

DR. W. H. TAGGART:

There is only one point I wish to discuss in connection with this paper. I think it is high time that we as dentists should combat the idea that we are poor business men. Taking into consideration the quality of brains that is put into us, we are as good business men as any of them. If some dentists carried on their business as some of these business houses carry on theirs, I am afraid it would be fatal to them. Take Marshall Field, for instance. How many of you have dealt with him for one or five years, running up accounts? If the same lax business methods that are carried on in that great house were continued in our line of business, it would be fatal to us. We go to our dental depots; they cast reflections on us and say we are not good business men. We go to them and ask for common stock in trade, and something we have a right to get from them, and we are informed they are out of that, and that we will have to send to Philadelphia or somewhere else for it. Supposing a patient wanted something from us, and we were lax in purchasing it as some of the dental depots are, what would the patient think of us? I think we are as good business men as the rest of them. Statistics show that ninety-five per cent of business men are failures. Are ninety-five per cent of the dentists failures? Not by a long shot. It is high time that we

should not let it go out among the people, and have it thrust at us, that we are poor business men. I have merchants, lawyers, ministers, manufacturers, credit men for large business houses on my list as patients, and not one of them shows any better business capacity than I do in the conduct of my business. If we allow the impression to go out that we are poor business men, people will thrust it at us just as long as we permit them.

MR. HANCOCK (closing the discussion):

I would not have had the temerity to have tackled this paper if it had not been for the fact that I wanted to bring a man before you whose name has been mentioned tonight—Mr. Sheldon, who could enlighten us on business methods, but who at the last moment skipped off to California.

Dr. Taggart says that dentists are as good business men as other men. We have to take the word of the dentist himself. I think if 100 per cent of the dentists were asked if they were good business men, 95 per cent would say they were not.

In regard to the remarks of Dr. Frink, who found so much in my paper with which to disagree, I have to say that it was conceived in a spirit of kindness, and I hope it will be accepted in that way:

CHICAGO DENTAL SOCIETY.

Regular meeting held January 3, 1905, in Booth Hall, Dr. W. H. Taggart in the chair.

Discussion on Dr. Goslee's paper.

DR. W. H. TAGGART:

Dr. Goslee's paper is one of unusual merit. It can be read and reread with profit. I had occasion last week to look up something that had transpired twenty-five years ago. I went to my library and the first volume of the *Dental Cosmos* I picked out was dated 1878. I skipped through the book, and if the subject matter discussed at that time had been brought before the society this evening, it would have been modern dentistry. The treatment of pyorrhea, abscess, stomatitis, and all the phases of dentistry coming under the medical side of it were so similar that I could not have told that discussion from one that might have taken place here tonight.

But there was no allusion to any such principles as Dr. Goslee presented this evening, showing that the progress made in dentistry has been made from the mechanical side. Why are we so anxious to attach ourselves to the medical side when we have established a reputation along mechanical lines? We all recognize that a broad education is essential to the modern dentist and that, perhaps, by taking a man and educating him as a physician first and then as a dentist it will make a better dentist of him. However, I agree to take any man and make a better dentist of him by giving him a mechanical training than by making a physician of him first. If it is necessary for him to get textbook knowledge, let him get it as a mechanical or mining engineer. It will give him a better idea of the fundamental principles which make the modern dentist than he will get from a medical school.

The fact that so many are present here tonight shows that the subject as well as the essayist are popular. I do not know of any criticism that I could offer. I corroborate all he said about the esthetic part of dentistry. I can conceive of no place in the mouth where a porcelain crown can not be put in. It is easier to put in a gold crown, and you may say that it is stronger, but if the porcelain crown is constructed properly, and attention is paid to details, it will have all the strength that is required of it.

In the last ten years I have not put on a single gold crown. If my work had not been successful I would not have dared to continue it. If my porcelain crowns were not strong enough, I would have gone back to gold crowns. But my practice has convinced me that porcelain crowns are strong enough. The fact that the tissues take more kindly to porcelain crowns outweighs any advantages the gold crown may possess. Porcelain is a nonirritant; it keeps the gum tissue healthy, and the life of the root is prolonged. I have yet to see a concretion form around a porcelain crown. All that should prejudice us in favor of the porcelain crown.

The details of construction the doctor has shown us are along the lines I follow. I have noticed that many attempt to cover the band over the labial surface with porcelain. They grind the porcelain facing and entirely cover the band. That is a great advantage because you get a gradual gradation of color. New made porcelain, in such thin layers as are required there, is not satisfactory.

It does not bake as it should, consequently the porcelain is covered with beads which are unsightly, and there is not enough bulk of porcelain, so that when it is baked little spaces are left. The little bubbles gradually break through and leave a roughness to serve as a nucleus for concretions. Therefore the porcelain facing should be ground to cover the labial portion of the band entirely.

One plan Dr. Goslee suggested, one almost too old for the paper, is the lapping of the band. That is not a good idea. Oftentimes that little extra bulk that two thicknesses of gold cause there is a detriment. By using iridio-platinum solder the ends of the band can not be swaged together as we swage together gold bands. Few dentists consider it necessary to lap a gold band. They butt it together and flow the solder in between. The same thing should be done with the other. In that way you avoid a very clumsy and unnecessary joint.

The use of the platinum solder in this porcelain crown work is a decided advantage. There is less gold in the amount of solder used than if it were pure gold, consequently there is less danger of bubbling. Oftentimes in soldering with pure gold, unless we absolutely sweat it in and volatilize, it will come out in the baking and make bubbles in the porcelain; whereas by using high fusing platinum solder there is a small proportion of gold mixed with it and the high temperature necessary to flow this volatilizes it, and we get rid of any vapor of gold that might form to the detriment of the porcelain.

DR. F. E. ROACH:

This paper is an excellent one and I agree with everything Dr. Goslee said. It is indeed pleasing to learn of the lessening use of the gold crown. There are of course many admirable features about the gold crown that can not be found in any other crown we may use. When Dr. Goslee enumerated the advantages of the porcelain crown, he failed to mention the absolute sanitary condition existing around such a crown, not only in the tissues but also in the adjacent teeth. That is very important and it is not found in the case of the gold crown.

The doctor so beautifully described the method of constructing the banded crown that there is no room left for argument, but he placed so much stress on the necessity of banding the crown that

it rather disparaged the bandless crown. In certain teeth I rather favor the bandless crown, such as the upper centrals, laterals and cuspids, which, in most cases, are better crowned without bands. The roots of these teeth usually are sufficiently strong to carry the crown, and the full gum tissue around them makes a banded crown rather an impossibility, that is, around the labial portion of the root. To place a band there so that it will not show is difficult in many of these teeth.

I place a great deal of stress on peripheral continuity in crowns without bands. It is a lamentable fact that so many ready-made crowns are used, and that many of them are so poorly fitted that almost invariably one finds that the peripheral adaptation is not perfect, even if they are quite well adapted to the end of the root. It is this projection of the crown which causes irritation of the tissues.

Fewer crowns are being used now than were used several years ago. Gold and porcelain inlays have done much to lessen the use of crowns. There can be no question that in the past too many crowns were used. Many teeth were sacrificed for the sake of putting on a crown. The fact that we are learning to make gold inlays and large restorations will enable us to limit the use of the crown considerably.

DR. B. J. CIGRAND:

This was a practical paper read by a practical man and in a way that must appeal to us all. Dr. C. N. Johnson said that gold is the poetry of operative dentistry. That is not true of prosthetic dentistry. We say that porcelain is the poetry of prosthetic dentistry.

I remember being in Dr. McKellop's office in St. Louis some seven or eight years ago, and he told me that he never placed any kind of filling in the mouth except a gold one. He had a thousand dollar reward out for any one who would bring to him one of his patients in whose mouth he had put anything else than gold. I thought at that time that it was a strange and extravagant statement, but I learned recently from one who worked in his office that those were the facts. He believed in gold.

Now we have a man well known to the profession, prominent in his work, tell us that in ten years he has not put a gold crown into the mouth. When men will stand up and blaze the way in

that fashion. I am willing to take off my hat to them, because it means courage and a certain amount of self-denial. Men who take a step forward are always assailed. They are called dreamers and extremists, but, nevertheless gentlemen, they move the world. I am glad Dr. Taggart made the statements he did, because it again re-enforces us in the belief that it not only takes dexterity and capacity, but honest conviction and courage to practise dentistry. I still use the gold crown with good results and effects.

The prosthetic dentist is associated with art and science; the mechanic dentist is not. The mechanic dentist is the man removed from his subject, probably the man behind the bench in the laboratory who has a model before him, the patient being miles away. He is working mechanically, without life, without inspiration. The prosthetic dentist must be inspired because his work is founded on physiology, anatomy, chemistry, histology and kindred sciences.

DR. A. E. MATTESON:

I have not found it necessary to insert a gold crown for over two years, but there are undoubtedly conditions that would demand their use, as with a short bite out of the line of vision.

I do not believe that it is best to use bands, except in rare and exceptional cases, as observation will show that wherever the periodontal membrane is impinged upon more or less inflammation and recession of the gums will follow. If the dowels are made to fit the canals and the disk, the end of the root, they will not be required. There is no more danger of the cement margin failing than with an inlay, nor as great, if the festoon of the gum covers the joint, forming a protection.

In the models exhibited, there were none shown—even molars—having more than one dowel and therefore would demand a band.

I do not think that the essayist gave sufficient importance to the use of iridio-platinum for dowels. I prefer the square wire flattened about one-third by passing through the rollers and for a double dowel split it with a fine saw for the right length and shaping with pliers, in a Bunsen flame at a red heat. After fitting to the canals press through the disk and solder. The disk is carefully burnished to the periphery of the root and trimmed, the wire is then cut the length required to engage with the pins of the fac-

ing, soldering with 20 per cent platinum. To prevent "etching" of facings when using this solder, paint the surface with a creamy solution of carbonate of magnesium before investing.

DR. L. H. ARNOLD:

Dr. Goslee laid much emphasis on the necessity for strongly soldering the pins to the post with high fusing solder, giving as his reason that the retention of porcelain to platinum depended almost wholly thereon.

A far better plan is to divide the stress and increase the attachments between the two by puncturing from the root side the floor of the cap—the "diaphragm" Dr. Matteson termed it—with a pointed three-cornered instrument. A puncture thus made turns up a burr on the porcelain side, which becomes firmly imbedded in the body of the piece and is fully as retentive as a headed pin in the facing.

Dr. Taggart brought out very nicely the fact about the fused surfaces being so much more kindly taken to by the gum tissue than is a polished metal surface. I like to bake the porcelain clear down onto the bands. Instead of having the lingual surface of the band metal, I cover it with porcelain.

DR. D. R. PHILLIPS:

This is a very excellent paper, as far as it goes, but it does not go far enough. As to the preparation of the root, Dr. Goslee says it should have a thorough and proper preparation. Many dentists differ as to what this should be. A crown should occupy, as nearly as possible, the same space as the natural tooth. The root should be so prepared around the periphery that the band does not occupy more space than the root did previously. Now, if, in addition to this, you grind the porcelain facing to lap on the labial surface, you must take more off the root on the labial surface to make room for that lap of porcelain. Otherwise you destroy the gingival margin and lessen the artistic appearance of the tooth. The band should be thus constructed to preserve the tissues which support the root. If the band is rough or sharp at the edge, it causes an irritation which at any time may destroy the stability of the root holding the crown; consequently, the edge of the band should be thin, with a round, smooth edge.

I notice that one of his specimens has two posts. If manufacturers, with their excellent facilities, send out 3 per cent of

teeth checked, it is evident that we, with our poor facilities, are going to have more checks. Hence, the more points we have for checks to start from, the greater the chance for bad teeth. In a post crown, like the Logan, the porcelain is fused to a common center, and it is far the best. You will get all the strength necessary if you fuse the porcelain properly around the head of the post.

Regarding one of the laterals, which had the post cut off at the cope, I think that is an element of weakness, owing to checks forming. In making porcelain crowns, it is an important practice to have a thoroughly fusing foundation body in around post and facing, and grind pins away entirely.

The Richmond crown has its place. There are times when it must be used—when you have a close shearing bite and it is necessary to use a thin tooth. You can use a backing reinforced by clasp metal which is strong enough to stand the wear, especially if reinforced on the lingual side where the band laps the root. There are other points about the Richmond crown that surpass the porcelain crown. Where you wish to retain the two incisors and make a plate for the rest of the mouth, if you build up the lingual portion of the incisors, so that the lowers occlude up into them, the occlusion of the lowers will hold them in place.

DR. E. J. PERRY:

I admire this paper for its high ideals. It comes from a practical man and is written in a practical way. The men who opened the discussion were all in harmony with the paper. They were porcelain men. Yet you can not get away from the good old gold crown. I have seen it used where the porcelain crown would not do at all, and I do not believe that it is good policy for a man to say that he fills teeth entirely with gold, or to say that he makes only porcelain crowns. Yet I agree that we should put the porcelain wherever it is practicable; but there are places where it is impracticable, and I put gold crowns there.

I quite agree with the essayist and the general trend of the discussion concerning the band. I think the consensus of opinion is that the band is a source of irritation to the dental ligament, but the essayist stated particularly that the band should be narrow, thereby conceding that if it were not very narrow it would irritate the dental ligament. Barring the very small laterals, I use no bands

with porcelain crowns. Lately I have constructed porcelain crowns and refitted the base with a fusible cement devised by Dr. Roach.

In making a crown for the bicuspsids or any of the anterior teeth, I make a base of thin platinum, using a platino-iridium post, soldering the facing to that and building up with added porcelain the lingual side of the tooth. After having finished it, I draw off the platinum base and use this fusible cement, as though I were about to set the crown, forcing the surplus out around the neck of the tooth and trimming it off. After it has set, I draw it and rebake it, thus securing an absolute adaptation of the porcelain to the end of the root, which is a great element of strength. I believe that makes about as good a porcelain crown as can be made.

DR. W. T. REEVES:

Every one should have the courage of their convictions, and if a person has the ability and skill to make porcelain crowns he should do so. In the past ten years I have made two gold crowns, and they were for molars, and one of the patients wished afterward that she had had a porcelain crown made. I have not yet found a case for which I could not make a porcelain crown. And there is no question but what the gum tissues take more kindly to porcelain and platinum than to gold.

In connection with bending back the pins to meet the dowel, I think if the location of the dowel is such that it will come in close apposition to the facing when it is ground into place, and the pins bent backward so that they will come against the facing, and the dowel being made of a square iridio-platinum, will have a flat surface against the facing, and then solder against the platinum, will give a stronger crown and leave no space there liable to shrinkage after baking of the porcelain. The pins are too long. I doubt whether he makes them as long as that. I use pins only of such length as to enable me to handle my work while I am baking. It is a mistake to consider that the pin is necessary for giving strength.

No doubt many of you have used Richmond crowns with the pins broken off and have cemented crowns back upon the roots with the pins still remaining in there and found that they set as well as they did originally.

DR. TAGGART:

I said I have not put on a gold crown in ten years, but I might

put one on tomorrow, if occasion called for it. However, I get better and more satisfactory results by using porcelain and the putting on of porcelain crowns has raised the standard of gold crowns. A man who has not the ability to make porcelain crowns will see that his gold crowns are made better so as to come up to the standard. We are amply justified in taking steps as long as they are not retrograde steps.

DR. T. W. BROPHY:

I can not make any suggestions that will increase your knowledge on the subject of crowning teeth, but when I listened to the masterly paper and the equally masterly discussion I was deeply impressed with the fact that these men are doctors, not within the narrow meaning of the word, but in its broadest sense. These men are teachers-doctors. Dr. Taggart said that the progress of practical dentistry is to be elevated; it will be elevated by such men as these. What matters it what you call a class of men when each man must stand on his merits. That which is in him will come out. That which will give him and his patients the best results is justifiable. I have put gold crowns on teeth subject to erosion in such a way that the crown did not extend down further than the bulge of the enamel of the tooth. Those crowns have been in service twenty years and are likely to remain there through life.

Can any one convince me that he could have put porcelain in a place like that and made it serviceable? Of course not. When there is a close occlusion, a carefully adjusted gold crown will serve the purpose better than a porcelain crown, which is subject to fracture unless you cut the tooth down low.

Yes, we are a profession. There is no branch of medical science, no department of medicine the discussion of which would not appeal to every medical man, no matter what specialty he is engaged in. But this discussion tonight would be of no more interest to the average medical man than a discussion upon the construction of a tunnel or a railroad bridge. That which pertains to our profession we must discuss and we must stand by what we do and what we are. We are a profession and not a fraction of one.

DR. GOSLEE (closing the discussion):

I am pleased with the reception of my paper, and also with the discussion. I admire Dr. Taggart for the courage he displayed when

he said he had not put a gold crown in the mouth for ten years, and also for the acquirement and development of a sufficient degree of skill to enable him to put porcelain everywhere. Personally, I have often found places, however, where I regarded porcelain to be contra-indicated; but still I am willing to confess that Dr. Taggart may have been able to put porcelain in those same places.

When considering the indications and contraindications, I ask myself whether I am justified in sacrificing enough of the natural tooth structure to make room for porcelain. If I feel that I am justified in doing so, then I make the effort to put on a porcelain crown, but if not, I would use gold. And so I agree with Dr. Perry, that sometimes we must resort to the use of gold. In crowning the anterior ten or twelve teeth, I make it a rule to invariably employ porcelain, and hence when I use gold it would be confined mainly to the second and third molars.

Dr. Taggart also spoke of the relative strength between porcelain and gold and porcelain crowns. I believe that there is scarcely any comparison between the strength of the one with the other. If you make a crown with a metal back and a porcelain facing, no matter how well you back up the facing, after all it is retained simply by the attachment pins. But in the construction of a porcelain crown you have that same attachment supplemented by the fusing of the porcelain itself over the entire lingual aspect of the facing, so that the strength of the well made porcelain crown is greater than that of the so-called "Richmond" crown.

There is no question about the comparative hygienic qualities of the two crowns. The gold crown becomes tarnished or discolored and coated with excretions and that increases until we have a condition that never exists with porcelain.

Dr. Taggart also spoke of the necessity of covering the labial or buccal edge of the band with porcelain, and of grinding the facing very thin to overlap these portions of the band. I think he was the first to suggest that to me, and I have always practiced it since, because since there is no physical union between platinum and porcelain, if you want to cover that portion of the band with porcelain you must provide some means for retaining it, and if you want to prevent the appearance of a dark blue line along the gum you must extend the facing in this manner and thus entirely cover up the band at this point.

He also spoke of the "lap" joint. You may have a double thickness of 28 or 29 gauge platinum and still not have it project out far enough to injure the gum or soft tissues, and I prefer a lap joint, no matter if you do use platinum solder, because there is absolutely no danger of its coming open in fusing the crown in the furnace.

Dr. Roach referred to the universal use of bands. I appreciate that this is a mooted question in the minds of many, but I believe that if you properly prepare the end of the root, and *fit* a band to it, you have a greater degree of strength than if you do not use a band. If we carry the joint between crown and root up high, where food can not accumulate, and the band "fits," no mechanical irritation will result. The trouble is, we usually slight the preparation of the root. Good results may often be obtained by the use of a simple plate or base well adapted, but, taking cases as they come, the best results will doubtless always be obtained from the use of a narrow, well adapted band.

Dr. Matteson said that he used *two* dowels in the first bicuspid roots. That is entirely unnecessary. By putting two dowels in these roots you materially weaken them, because you must enlarge the canals to receive the dowels, and if one dowel will do the work, why use two and thus weaken the root? I make it a practice to place one short, strong dowel in the lingual canal, and those crowns do not come off any oftener than do the others.

It was suggested that instead of depending entirely on platinum solder in the attachment of the facing that the surface of the diaphragm be perforated to supplement the attachment of the porcelain to the metal. I have no objection to such perforation or to the spurring of the floor of the cap, but it is unnecessary. The point I made was that while you can construct all of the metal parts with pure gold as a solder, yet a greater degree of strength is necessary in the attachment of the facing than the use of pure gold affords, because you attach that facing to the metal and it supports all of the porcelain used in the formation of the crown. Often I have had the entire mass of porcelain break away from the metal construction, and this is usually due to the fact that the facing was attached with pure gold and the gold melted in the furnace and became absorbed by the platinum or passed off in vapor, thus leaving a weakened at-

tachment. To prevent this I suggested that the facing be attached with platinum solder, and I believe that the best results are to be obtained in that way.

As to grinding away the pins, if you have made some mechanical provision for securing the attachment of all the porcelain to the metal, you can grind off the pins with impunity. If you allow the surplus end of the dowel to project slightly beyond the floor and be of such shape as to mechanically hold all the porcelain after the first baking, you can grind the pins away and finish contouring with porcelain, and the completed crown will possess adequate strength.

Dr. Phillips took occasion to say that I had not touched on some things of material importance, and yet he should know that it was impossible for me to touch on everything in the reading of such a short paper. I could have written perhaps half an hour longer on the dowel alone, for example, but I considered it unnecessary, because this society has had papers on porcelain crown work before. The artificial crown should restore the normal condition, and you can do that better with the porcelain crown than with any other, but where you lap the facing over the labial portion of the band you must cut the root shorter and get it in closer to allow for the slight fullness produced by this overlapped end of the facing.

He also said that he did not believe in the employment of the lingual support, which I suggested as a means of destroying the line of cleavage and of protecting the mass of porcelain that forms the masticating surface. I regard this as extremely important, because I have found these lingual cusps of porcelain on bicuspid to break off frequently from the stress of mastication. If you extend the little shoulder, however, and thus support the porcelain against stress, there is little likelihood of any such breaking away.

I do not believe that we can rely on such short dowels as Dr. Reeves says will support the artificial crowns. I extend the dowel into the tooth, if possible, a distance equal to the length of the crown. That is all that is necessary, but *it* is a mechanical requirement.

The use of square iridio-platinum offers no possible improvement over the round, and I prefer the latter in order to avoid sharp angles. In this connection I have previously said that after soldering had been completed all sharp angles should be rounded off before the porcelain is built on and fused.

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EDITORIAL.

A TRIP TO THE COAST.

In the March number of THE DENTAL REVIEW attention was called to the Lewis and Clark Dental Congress at Portland, Oregon, July 17, 18, 19, 20, 1905, and to the very liberal rates offered by the railroads for the round trip, \$56.50 from Chicago. Since that a great deal of interest is being manifested in this trip and the probability is that a large number of dentists from this vicinity will take advantage of the opportunity to attend the congress.

It is now suggested that we arrange to go in a body. Mr. C. A. Matthews, of the Northern Pacific Railway, Chicago, has promised that if a sufficient number decide to go at one time he will place a special sleeping car at our disposal from Chicago to Portland. Not only this, but he will hold the car at Livingston free of charge while the party goes through the Yellowstone Park. This trip through the park will take five and one-half days and the entire cost per passenger, hotel bills and all, will be only \$49.50. Such an opportunity as this should not be overlooked. The cost for holding a sleeper at Livingston is usually \$45.00 per day, and when our party is offered this special accommodation for nothing it should prove an inducement. If we can get together thirty people to go at one time we shall be assured of a most delightful trip, with the best of everything provided for our comfort.

The trip back, via the Canadian Pacific Railway, with liberal stopovers, and a return limit of ninety days, gives an opportunity of seeing the greatest scenery in the world and at rates that have never before been offered.

We are informed by the committee that the work of the con-

gress is progressing most favorably, and that a very large attendance is already assured. We hope that a good delegation will go from here, and we shall be glad to hear from those who expect to attend.

THE EDITOR'S DESK.

A CURE FOR THE BLUES.

I have tried all kinds, from travel to calomel, and from horse-back riding to the latest opera; but I have never found anything which so nearly proves a specific as the simple expedient of work. I have worked myself out of many a desperate mood, and I have never been able to cure myself by any other method. I wish some one would tell me why it is that an ordinarily sane individual will find himself in such a depressed mood at times that there does not seem to be a bright spot in the world anywhere. And the strange part of it is that it so often comes upon a man when there is apparently no good reason for it. He may be prosperous, he may feel well physically, he may have friends on every side, and yet he may be suffering from such a mental strabismus that he can see nothing in life worth the living. We are a strange bundle of inconsistencies anyhow.

Some people cling to life under the most discouraging and adverse circumstances, while others with everything apparently in their favor, grow pessimistic and commit suicide. The most cheerful individual I ever saw was a man who was so crippled that he was literally bent double. When he attempted to walk the top of his head nearly touched the ground, and in order to hobble along he was obliged to use his hands more than his feet, and to twist his head around to one side in the most painful way to see where he was going—his face being presented to the rear and his eyes upside down on account of his deformity. And yet I have seen this man come down town on the street car—he usually rode on the grip—and make his way grotesquely to the sidewalk and up the street in all kinds of weather, as full of business as any one. And I never saw anything in the way of a frown on his face, never saw the slightest indication of pain or impatience, never heard that he ever made a murmur. With everything apparently against him, he seemed to get the most out of life.

And I have seen malcontents of the meanest type with privileges that a prince might enjoy—but that is another story.

I started to write of a cure for the blues. When you are blue get down to good, hard work, physical or mental, and work till you are tired; then remember one thing and dwell on that until you begin to see daylight ahead. Remember that no matter how blue you feel the cause is in yourself, that the good old world wags along the same as ever, that your friends love you as much and your enemies do not hate you more. Be brave, fight the battle manfully with yourself, and your blues will not last long.

BOOK REVIEWS.

A MANUAL OF MECHANICAL DENTISTRY AND METALLURGY. By George W. Warren, A. M., D. D. S., Professor of Clinical Dentistry, Pennsylvania College of Dental Surgery, Philadelphia; author of "A Compend of Dental Pathology and Dental Medicine;" editor of "Richardson's Mechanical Dentistry."

Second edition, revised and in parts rewritten, with 179 illustrations. Pages 257. Price \$2.00 net. Published by P. Blakiston's Son & Co., Philadelphia.

Dr. Warren is so well known as a writer of dental books that it is unnecessary to call more than passing attention to this work. The general character of dental publications is improving, and the second edition of this book marks a decided advance over the original publication. The author has made the most of his space and has given us a book as comprehensive of the subject as the size of the volume would permit.

ANATOMIE ET PHYSIOLOGIE DE LA BOUCHE ET DES DENTS, par le docteur Sauvez, Professeur a l'Ecole dentaire de Paris. 2e edition refondue par Wicart, interne des Hopitaux, et Lemerle, preparateur a l'Ecole dentaire de Paris. 1905. Un volume in-18 de 316 pages et 58 figures, cartonné; 3 fr. (Librairie J.-B. Bailliere et fils, 19, rue Hautefeuille, Paris).

This is one of the manuals of dentistry published under the direction of Dr. Charles Godon, director of the Dental School of Paris, France. It is a most worthy addition to the dental literature of France, and we highly commend it to those familiar with the language.

PRACTICAL HINTS DEPARTMENT.

EDITED BY G. W. JOHNSON, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, THE DENTAL REVIEW, 55 State street, Chicago, Ill.]

Cavity Preparation for Inlays:—Complaint is frequently made that porcelain inlays are liable to come out of labial cavities. The chief trouble is that the cavity preparation is imperfect. A cavity with a rounded base will not do. Make the axial wall flat and make an angle between this wall and the surrounding walls. It need not be a sharp right angle but it may be very nearly this, and still permit of the removal of the matrix. The tendency to make rounded, saucer-shaped cavities is accountable for most of these failures.—*Frank E. Cheeseman, Chicago.*

Roughen the Cavity Side of Your Inlays:—Inlays will not remain in cavities by the force of faith alone, and neither will they always remain by the adhesive properties of cement. Get as deep anchorage as possible in your cavity preparation, and then if the inlay is of porcelain etch the cavity side with hydrofluoric acid to roughen it. If it has sufficient bulk groove it. With gold inlays they can almost invariably be grooved to advantage. Prepare the cavity side in such a way that the cement will take hold of it firmly. Do not depend on faith.—*E. D.*

Convenient Instrument:—A very convenient little instrument can be made for burnishing the backing close to the pins of a facing such as is used in construction of Richmond crowns as follows: Take any old excavator and draw the temper. Cut off from cutting end of instrument until it is a little larger than the end of lead of pencil and countersink a hole in the end by using drill in engine, drilling a hole the size of platinum pins in facing and deep enough to more than receive pin. Use any sharp pointed instrument for punching holes through backing to accommodate the pins of facing, placing the gold with the edges that are flared out, caused by the instrument

in piercing the gold away from the backing. Then by using the burnishing instrument placed over the pins, pressing backing down hard against facing, give a few turns of instrument and your gold will make a perfect joint with pins. By this system the pins do not have to be bent, thus bringing extra strain on porcelain.—*C. E. Bellchamber, Effington, Ill.*

Queries:—The editor of THE REVIEW is constantly receiving communications from members of the profession requesting enlightenment on certain subjects, and often asking that the answer be published in "the next issue." While we feel under obligations to all members of the profession to do everything in our power to promote their welfare, yet we find it absolutely impossible to answer each question personally, or to write an answer to each one for publication. We have decided, therefore, to publish these questions in the Practical Hints department, and the members of the profession are invited to send in their answers as profusely as they desire. We want other ideas as well as our own, to be published in answer to any question, believing that the profession at large will be benefited thereby.

Editor Dental Review: Will you please give in your next issue what the different stains on teeth indicate, as to the physical condition of the body?—*G. S. Hershey, Michigan City, Ind.*

Editor Dental Review: Please tell me what will remove silver nitrate stains from enamel.—*L. P. Leonard, St. Cloud, Minn.*

Interesting Case:—The following case has been of great interest to me in point of speculation and has also caused a few friends of mine in the profession to scratch their heads and look wise:

A patient presented with a small cavity in L. S. 1st M. The tooth had ached at times and suspecting pulp stones I took out the pulp by pressure anesthesia and later filled the tooth. Five months later she presented with the L. S. 1st bicuspid (which was sound) sore to the touch and aching. I drilled into the tooth and treated it as in the foregoing case, later inserting a gold filling after the soreness had passed away. One month later she presented again with the L. S. 2d bicuspid very sore, which had to go through the mill also. The same patient is now complaining of the R. S. 1st bicuspid

acting after the same manner of her other teeth, which were devitalized. The patient is tubercular, her parents having succumbed to the white plague. I was unable to find pulp stones in any of her teeth, which one might suspect. I have been wondering if the cocaine did not have an effect beyond the tooth treated in the first instance. I would like to receive the thoughts of others on the subject.—*W. C. Huestis, Minneapolis, Minn.*

DOMESTIC CORRESPONDENCE.

NEW YORK LETTER.

MY DEAR MR. EDITOR:

A regular meeting of the Institute of Stomatology was held Tuesday evening, April 4th, at the Chelsea.

Communications on theory and practice are becoming quite a feature. Some very valuable material is passed about in that way, and at times more edifying than an essay.

Dr. H. W. Gillett spoke of the tipping of partly impacted third molars where the occlusal surface projects against the distal surface of second molars. Base plate gutta percha is crowded into the space and changed each week or two, or gross line wedges are used. The principle permits of the simple extraction of molars that might otherwise require operative procedure in removing. And then he spoke of slipping seamless German silver bands over badly decayed bicuspids and molars to facilitate the ready filling of complex cavities, or cavities in retarded erupted second molars. He had more of Dr. Clapp's (of Boston) new principle tooth brushes for distribution. It is called the "Rolling." The handle curves in the opposite direction to the Prophylactic, the bristles are quite short and taper shorter to the end. There are no tufts. It is contended that such a brush permits of reaching situations not accessible with any other. My experience with it leads me to agree. The very small brush (they are made in three sizes) I find an excellent thing to give the patient for whom regulating is being done.

Dr. F. C. Brush slips a short section of proper sized rubber tubing over the end of clip-blower as a protection to soft parts of patient's mouth when the metal point is heated. Tubing is large enough to slide up and down so as to uncover while heating. He

also showed a reinforced wooden wedge which is made to exert more continuous pressure by the insertion of a heavy separating rubber through a hole drilled in the wood.

Dr. Gaylord brought a number of ordinary shoemaker's pegs which he uses in the port-polisher as cleaners.

Dr. McNaughton spoke of the excellent results he feels he has accomplished by rolling soft and cohesive foil in same cylinder. Not for contouring, be it said.

Glutol was spoken of as an excellent material for separating teeth on account of its unusual expansive property. It is a preparation of gelatin treated with formaldehyd.

Dr. LeRoy read an article on the presence of supernumerary deciduous incisor in the human dentition as reported by Charles Earle, B. Sc.

After this theory and practice talk Dr. F. C. Brush became one of the essayists of the evening, using as a title "The Idle Moments of Busy Men." He asked the question, How is it busy men find time for study and research? He argued that true rest was a change from routine. "When the day's labors are on we long for the restful hours of evening. When they have advanced there comes the longing for the hours of day."

He suggested keeping a pad near one's chair for jotting memoranda of things occurring to one that might otherwise be lost. Your correspondent advises one at the head of the bed, for sleepless minutes are oftentimes full of remarkable thoughts and one can make a memo. on a pad in the dark that will be sufficient for better elaboration on the morrow.

The suggestion was made by Dr. Brush to take impressions of all abnormal mouths for study.

The truly busy man in his idle moments finds time for many things.

Dr. Melvin W. Whitlock, as per announcement, read a short paper on "Cleansing Teeth as the Subject Appears to the Writer," which was based on the D. D. Smith practice, although probably not founded altogether on that. This he said, and it can not be emphasized too often, "Of all operations, cleansing stands first." We are giving our patients our best efforts.

Dr. F. M. Smith was one of several to discuss both papers. He

spoke of the value to him of the few minutes he could call his own, and of the memo. pad.

In discussing Dr. Whitlock's paper he referred to some of those patients we have all had whose mouths show the lack of hygienic care. "In all other respects she is a lady." His practice is to do the cleansing at the first sitting and dusting at the next.

Dr. Allis gave us a very good point about dividing the indices of subject in each month's journals, tabulating them according to subjects under one general index.

Dr. Charles Allen said a bright, helpful secretary was what we required. Dr. Smith asked: "Where do they keep them?"

Dr. Cook, of Brooklyn, said that he knew Dr. Riggs in his lifetime. "I don't think he knew pyorrhœa from simple calculus deposits. He said he (Dr. Cook) did not remember pyorrhœa fifty or sixty years ago.

Dr. Herbert Wheeler told that he has been examining ancient skulls in his studies, hundreds of them, and he has been impressed by the large quantity of calculus on the teeth, yet no destruction of osseous tissue and practically no tilted teeth. His observations lead him to doubt if there is or ever was a perfect set of teeth. In these old skulls he found the relative position of first molars the same but the anterior teeth occlude edge to edge. Gingivitis exhibited only where pulps died in old patients.

Nature never made an ideal, but things are always adjusting themselves to their environment.

Dr. Kimball said he had been in practice twenty-five years before he saw a case of pyorrhœa to know it. He believes it a preventable disease. He spoke of the case of a boy of sixteen with pyorrhœa and loss of teeth.

Dr. LeRoy asked whether that might not have been a case of salivation.

Dr. Brush in closing said it was very foolish practice to make a garret of one's brains.

Dr. Whitlock in closing said that it was the practice of those operators (meaning some practitioners of thirty to fifty years ago) to take such good care of the teeth of patients under their care that they had no pyorrhœa. If the Doctor was not such a serious individual one might think he was jesting.

The following announcement was sent out for the dinner of the Interstate Dental Fraternity:

"We are pleased to announce to the members of the Interstate Dental Fraternity that they are to have a glimpse of Bohemia. Not the fictitious Bohemia of the cheap cafés, but that Bohemia which stands for the 'bon comaraderie' of the true artists, and as dentists sometimes account themselves to be artists it is to be hoped that they may feel at home at the *Salmagundi Club* (one of the most renowned art clubs in this part of the country), No. 14 West Twelfth street, New York City where the dinner will be served at seven o'clock on the evening of Thursday, April sixth."

Mr. Louis Mora, Mr. Henry Mayer and Mr. Anthony Euwer were the guests of the evening and each told several good stories—real good. The other speakers of the evening were not remiss.

Seven vice-presidents of the fraternity were present. Dr. B. Holly Smith, vice-president for Maryland; Dr. James McManus, for Connecticut; Dr. I. N. Broomell, for Pennsylvania; Dr. J. F. Dowsley, for Massachusetts; Dr. Charles Diedel, for District of Columbia; Dr. R. Ottolengui, for New York. Upon him devolved most of the labors of preparations for this dinner, together with Dr. S. C. G. Watkins, vice-president for New Jersey, who is also a member of the *Salmagundi Club*.

The menu card was a pictorial presentation of what things they had for us to eat. Oyster cocktails were represented by oyster shells and a green pepper from which projects the head and the tail feathers of a rooster, etc., etc.

The post-prandial arrangements were conducted by Dr. Holly Smith, and he filled the toast-master's part very pleasingly.

Some of the speakers were Dr. A. W. Harlan, of New York; Mr. Louis Mora, the artist; Dr. Ashe, of Brooklyn; Mr. Mayer and Mr. Euwer, of the club; Dr. Sanger, of East Orange; Dr. Van Vleck, of Hudson; Dr. James McManus, Dr. Herbert, Dr. Gaylord, of New Haven; Dr. Broomell, of Philadelphia, and Dr. Ottolengui, of New York. The latter announced that the original drawing of Mr. Mora's having been submitted to each member present for autograph (there were probably seventy-five present) the same would be put up for auction. Dr. Marshall Smith, B. Holly Smith's brother, was the fortunate individual to win it.

The April meeting of the Second District Dental Society (the Brooklyn Society) was its annual election of officers. This society has covered itself with glory, so to speak, this past winter by the character of its meetings, which, under the direction of the president, Dr. Horace Gould, and an effective and wide-awake executive committee, have been exceedingly interesting and instructive. Notably has this been the case in two meetings—one having the question of extracting any teeth for correction of irregularities, as its topic, and the other the comparison of porcelain with gold for filling and preserving the teeth.

The election of officers resulted as follows: President, Dr. Horace P. Gould; vice-president, Dr. R. G. Hutchinson Jr.; recording secretary, Dr. J. H. Hanning; corresponding secretary, Dr. F. LeRoy; treasurer, Dr. W. W. Thompson; librarian, Dr. E. H. Babcock; executive committee, Dr. R. G. Hutchinson Jr., chairman, Dr. D. W. Barker, Dr. W. B. Dills.

It is quite certain that the confidence shown by this reëlection will be more than justified by the work of the next year.

The April meeting of the Odontological Society was held as usual at the Academy of Medicine, 17 West Forty-third street, with the president, Dr. John I. Hart, in the chair. Under Incidents of Office Practice Dr. Gillette showed some instrument handles made of an aluminum alloy, which he claimed overcame some of the serious objections to handles as usually made of aluminum. He also showed some very thin 18k. gold, which he thought was much better and fully as strong for bands for the Angle or Ainsworth methods of regulating than German silver, and in the end not any more expensive.

The essayist of the evening, Dr. Wilbur M. Dailey, then presented a paper entitled "Mal-occlusion of Deciduous Teeth," which was profusely illustrated with the stereopticon.

He described how the mal-occlusion of such teeth would inevitably affect the permanent teeth; thought it was far more common than authors had taken notice of. Referred in some detail to various other causes of irregularity. Spoke of the improper development of the arches as one of the most common causes.

In discussion, Drs. Stanley, Perry, Gillette, Tracey and others participated.

Dr. Stanley agreed with the essayist that if taken in early

childhood, much irregularity of the permanent teeth would be avoided, but did not agree regarding the proportion of irregularity in deciduous teeth as related to permanent.

Dr. Perry gave some reminiscences of former years and the methods then as compared with the newer school.

The Central Dental Association banquet and evening meeting was held at Achtelstetter's, Broad street, Newark, on April 17th. Dr. T. S. Dunning, the newly elected president, presiding. All other business for the evening was dispensed with and the essayist, Dr. R. Ottolengui, called upon to read his paper, the title of which was "Have We Any Further Use for Amalgam?" The speaker did not elucidate anything new or radical, simply contending that amalgam still has a place in spite of the fact that porcelain has come to occupy some positions that were formerly conceded to be the strong places for amalgam. Dr. Ottolengui laid stress on the fact that amalgam fillings have come into disrepute because the material has been handled haphazardly. Amalgam should be used to build up badly decayed teeth on which shell crowns are to be placed. Amalgam can be regarded as sole reliance on the occlusal surface of temporary teeth where surrounded by enamel walls. The general admonishment was to avoid amalgam in young mouths and be guided by conditions of adult mouths.

It is rare to see amalgam good after long use, but possibly we would if the same care were always bestowed that is given to finishing of gold.

Dr. Head opened the discussion by calling attention to the extreme conservatism of the essayist. He, too, believes in amalgam, but it must be packed and finished properly and he described at some length his method.

Dr. L. Ashley Faught said he was expecting the exploiting of some new use for amalgam, but there has been simple recounting of old ones. He has found it of great value in counteracting erosion where its appearance was not objectionable, and for repairing certain gold work.

Dr. A. W. Harlan brought out the cost of amalgam being a great factor in its too general use. There are more teeth filled with amalgam today than with gold. He expressed himself in favor of idealistic dentistry but people must have their teeth saved. A great many teeth have been filled with porcelain. They have been saved by the

thin film of cement rather than the porcelain. Sterilization of cavities with something absolutely soluble in water is another requisite. Cement and amalgam make practically an amalgam inlay.

Dr. S. C. G. Watkins believes there will always be a place for amalgam. There are many cases where it would be impossible to fill with anything else.

Dr. Lucky seemed to think that to say that amalgam had no place in dentistry was useless, but it required as much skill to use it as anything else. If you do you will get results.

Dr. Sanger said there was no question about amalgam's use but there was danger in the sloppy use. "It is the best friend we have and it would delight Dr. Flagg's heart to hear me say it."

Dr. Ottolengui, in responding to Dr. Harlan's financial point, said amalgam was no economy. We never hear the question of amalgam but that question comes up. When he sees good amalgam fillings in the mouth of a patient he is inclined to send a letter of congratulation to the gentleman who did them. He denied that more teeth were saved with amalgam than with anything else.

Dr. A. W. Harlan and the discussion which followed occupied the balance of the evening with the subject of "Anesthetic Effect of Blue Light," which he said was not new, dating back to the time of General Pleasanton, of the United States army.

Dr. Harlan described several cases where the light had been used. Dr. Meeker, the society's treasurer, was one of the patients and verified what the Doctor said about the extraction of a tooth for him painlessly.

The outfit consists of a true blue 16-candle power electric light bulb without the glass blower's tip at the end and a metallic reflector. Cover the head and lamp with a dark cloth. The patient is instructed to keep the eyes open and look at the lamp which is held about eight inches or so from the face. In a minute or so the pupils dilate if the patient is susceptible. Anesthesia is produced in about three minutes.

Dr. Harlan also spoke of the use of the violet ray of colored light for controlling pyorrhœa.

Dr. Ottolengui thought the effect produced on patients where blue light was used was mesmerism or hypnotism.

Dental society elections have too often in the past, in our section

at least, seemed farcical, but that of the First District Society at the annual meeting, April 11th, was a decidedly interesting one. There were almost one hundred members present. The first ballot for president showed ninety-six votes cast. Dr. Arthur L. Swift was elected president, Dr. J. W. Taylor vice-president, Dr. Benjamin Nash secretary, Dr. Herbert Armstrong treasurer, Dr. Martin Tracy, librarian, and Drs. William B. Hills, F. C. Turner and Wilbur Dailey as delegates to the State Society.

Dr. Benjamin Nash was the public recipient of honors by members of the First District Society. As reported to you last month, a Tiffany watch had been purchased for him. Dr. S. G. Perry was selected to make the presentation remarks.

Dr. Perry had in mind the strenuous evening just ended by election of officers when he said, "We have come at last to a moment of peace and pleasure to honor Dr. Nash." Some of the things he said are: "In these times we honor men who do things. Dr. Nash has been twenty years doing things for this society. If I love anything in this life it is to do honor to whom honor is due." With some other very pleasing remarks Dr. Nash received the watch, for which he expressed himself as grateful for recognition, but like most all other people he was at a loss for language to express.

The final business of the evening was the installing of the new president, Dr. A. L. Swift.

Sincerely yours,

THE BOROUGHS.

MEMORANDA.

AMERICAN SOCIETY OF ORTHODONTISTS.

The next meeting of the American Society of Orthodontists will be held at Chicago, September 28, 29 and 30, 1905.

ANNA HOPKINS, D. D. S., *Secretary*.

DR. HASKELL'S BIRTHDAY.

On April 25, 1905, Dr. L. P. Haskell was 79 years young. He has been longer in practice than any dentist of our knowledge who is still in active practice, and he is apparently as young today as he was a quarter of a century ago. Long may he live!

MINNESOTA STATE DENTAL ASSOCIATION.

The twenty-second annual meeting of this Association will be held at Minneapolis, June 1, 2, 3, 1905. The profession is cordially invited.

DR. J. O. WELLS, *President*.

DR. GEORGE S. TODD, *Secretary*.

INTERNATIONAL DENTAL FEDERATION.

The next annual meeting of the executive council of the Fédération Dentaire Internationale will convene in Hanover, Germany, August 7, 1905, immediately following the annual meeting of the Central-Verein Deutscher Zahnärzte. Announcement of the program for the meeting and the projected work for the Federation during the present period will shortly be made through the dental journals and through the official bulletin of the Federation.

EDWARD C. KIRK, *Secretary-General*.

MINNESOTA STATE BOARD OF DENTAL EXAMINERS.

The Minnesota State Board of Dental Examiners will hold a special examination on June 5th, 6th and 7th at the dental department of the State University.

The secretary will be at the dental department on the afternoon of June 3d to receive applications. All applications must be in by 5 p. m. of that date. Application blanks will be furnished upon request by the secretary.

F. S. JAMES, *Secretary*,
Winona, Minn.

THE SOUTH DAKOTA STATE BOARD OF DENTAL EXAMINERS.

The next meeting of the South Dakota State Board of Dental Examiners will be held at Mitchell, S. D., July 11, 1905, beginning at 1:30 p. m.

All candidates will be required to perform practical work in both operative and prosthetic dentistry and should bring all instruments and materials necessary. Vulcanizer, lathe and swaging appliances will be furnished by the board. Application, together with the fee of \$10, must positively be in the hands of the secretary before July 7th.

G. W. COLLINS, *Secretary*,
Vermillion, S. D.

WISCONSIN STATE BOARD OF DENTAL EXAMINERS.

The next meeting of the Wisconsin State Board of Dental Examiners for examination of candidates for license to practice dentistry in Wisconsin will be held in Milwaukee, June 26, 1905, at the Wisconsin College of Physicians and Surgeons, corner Fourth street and Reservoir avenue.

Application must be made to the secretary fifteen days before examination. The candidate must be a graduate of a reputable dental college or have been engaged in reputable practice of dentistry consecutively for four years, or an apprentice to a dentist engaged in the reputable practice of dentistry for five years.

For further particulars apply to

J. J. WRIGHT, *Secretary*,
1218 Wells building, Milwaukee, Wis.

KENTUCKY STATE BOARD OF DENTAL EXAMINERS.

The Kentucky State Board of Dental Examiners will meet for examination of candidates at Louisville on the 6th of June, 1905, at Gaulbert building, commencing at 9 o'clock a. m. Candidates will be examined in following subjects: Anatomy, physiology, materia medica, pathology, histology, operative dentistry, oral surgery, chemistry, metallurgy and prosthetic dentistry.

A general average of 75 per cent is required. Candidates must come prepared with instruments (except engine) and material (gold) to fill at least one tooth; also a metal case of not less than four teeth (bridge or plate)

invested, and ready to solder before the board. Candidates will be required to certify that all work on metal case was done by them.

Application for examination must be made on blanks furnished by secretary and must be accompanied by a fee of \$20.

Candidates must be graduates of reputable dental colleges.

KENTUCKY STATE BOARD OF DENTAL EXAMINERS.

By C. R. SHACKLETTE, *Secretary*,
628 Fourth avenue, Louisville.

DR. C. L. GODDARD.

Resolutions of the Los Angeles Association of Dental Alumni:

As the Almighty Father, in His infinite wisdom, has seen fit to remove Dr. C. L. Goddard from among us, to the deep sorrow of the Association of Dental Alumni of Los Angeles, its members realize that by his death the Association has lost a great, grand and good man and the dental profession a zealous worker, a conscientious teacher and a scientist of high rank. He was universally beloved for his gentle, refined and kindly nature. By his death the Association has lost a loyal friend and a willing helper. Therefore be it

Resolved, That these resolutions be spread upon the minutes; and be it further

Resolved, That an engrossed copy of the same be sent to the widow of Dr. Goddard as an expression of our heartfelt sympathy in her bereavement.

WILLIAM BEBB,
D. CAVE,
L. E. FORD,

Committee.

PATENTS RECENTLY GRANTED OF INTEREST TO DENTISTS.

- 785,548. Dental chair. Aaron P. Gould, Canton, Ohio.
- 785,619. Dental matrix retainer. Closson M. Leffingwell, Little Falls, Minn.
- 785,529. Dental jaw brace. Charles A. Thomson, Belleville, N. J.
- 785,999. Connection for artificial teeth and dental plates. Samuel S. Bloom, Philadelphia, Pa.
- 785,715. Manufacture of artificial teeth or the like. Frederic A. J. Courmand, Paris, France.
- 785,904. Waxing-up tool for dental trial plates. Andrew May, St. Catherine's, Canada.
- 785,992. Shade guide for artificial teeth. George H. Whiteley, York, Pa.
- 785,993. Mold for artificial teeth. George H. Whiteley, York, Pa.
- 785,788. Dental tool. Raimund Zentner, Weisbaden, Germany.
- 786,748. Artificial denture. Benson W. Fordyce, Bedford, Iowa.
- 786,279. Apparatus for making dentures. George P. Franklin, Philadelphia, Pa.
- 786,662. Dental engine attachment. John E. Morgan, Emporia, Kan.
- 786,678. Dental floss holder. Clifton M. Rawlins, Cleveland, Ohio.

Copies of above patents may be obtained for 10 cents each by addressing John A. Saul, solicitor of patents, Fendall building, Washington, D. C.

NATIONAL DENTAL ASSOCIATION.

Ninth annual session to be held in Buffalo, N. Y., July 25th to 28th, inclusive.

The Hotel Iroquois has been selected by the local committee of arrangements as headquarters, where all general sessions of the Association and of

the sections will be held. The clinics will be held at the rooms of the dental department, University of Buffalo.

Rates at the Hotel Iroquois are: Single rooms, per day, \$1.50, \$2.00 and \$2.50; rooms for two persons, \$3.00 and \$4.00; single rooms, with bath, \$3.00 and \$3.50; rooms with bath for two persons, \$5.00, \$6.00, \$7.00 and \$7.50; all rooms on the European plan.

The usual railroad rate of one and one-third fare for the round trip, certificate plan, has been arranged for by the executive committee.

All pay full fare going, taking the proper certificate therefor from the ticket agent, which, when properly viséd at the meeting, entitles the holder to return for one-third the regular rate.

Tickets going may be purchased from July 20th to 26th and are good returning to and including August 2d.

Both the general officers and those of the sections have been working hard to provide an interesting and instructive program, and a large attendance is expected.

A. H. PECK, *Recording Secretary*,
92 State street, Chicago, Ill.

THE NORTHERN OHIO DENTAL ASSOCIATION.

The forty-sixth annual meeting of the Northern Ohio Dental Association will be held June 6th, 7th and 8th at Gray's Armory, Cleveland, Ohio.

This is not only one of the oldest but is one of the very best attended meetings in the country. This year the program is one of unusual strength and interest. The leading subjects for consideration are: 1. Humanitarian Methods. 2. Mistakes. 3. Prophylaxis.

Under the first is considered "High-Pressure Anesthesia," by Dr. C. G. Myers, of Cleveland, and "High-Pressure Anesthesia as Compared with Other Pain-Preventing Methods," by Dr. D. H. Zeigler, of Cleveland. Essays under the second group include "The Mistakes of the Country Dentists," by Dr. R. D. Wallace, Scio, Ohio; "Mistakes of the City Dentist," by Dr. F. J. Spargur, Cleveland, Ohio, and "Mistakes in Ethics," by Prof. S. H. Guilford of Philadelphia, Pa. The third includes these essays: "Two Sources of Tooth Life and Their Relative Importance," by Dr. D. D. Smith, of Philadelphia, Pa., and "Diseases of the Peridental Membrane and Treatment," by Dr. J. V. Stahl, of Wooster, Ohio.

There will be about fifty clinics, selected and arranged to give the knowledge-seeking dentists the best post-graduate course that can possibly be obtained in a three-days' meeting. One session will be devoted to the study of manufacturers' exhibits. The exhibits this year are to be one of the interesting features of the meeting, and the committee has been promised one of the largest exhibits shown in the country.

All communications pertaining to clinics or exhibits should be addressed to the corresponding secretary, Dr. W. G. Ebersole, 800 Schofield building, Cleveland, Ohio. Special rate of a fare and a third has been granted, on the certificate plan, by the Central Passenger Association. The committee extends a most cordial invitation to the members of the profession to attend.

(Signed.)

W. G. EBERSOLE,
GEORGE H. WILSON,
VARNEY E. BARNES,
Executive Committee.

NATIONAL DENTAL ASSOCIATION CLINIC.

The National Dental Association will meet at Buffalo, N. Y., commencing July 25th. It is the desire of the president and chairman of the clinic section to hold the best clinic in the history of the Society. The clinics will be held Wednesday and Thursday, July 26th and 27th, in the Buffalo Dental

College, where there is every facility for making practical operations, as well as ample room for all those wishing to give table clinics. Forty dental operations will be made each day, and there is room for holding 300 table clinics. Those interested can apply to

Dr. S. W. Bowles, 1315 New York avenue, Washington, chairman for District of Columbia, Delaware and New Jersey.

Dr. E. C. Blasdel, 1 Pleasant street, Portsmouth, N. H., chairman for Maine, New Hampshire and Vermont.

Dr. F. W. Gethro, 31 Washington street, Chicago, chairman for Illinois and Wisconsin.

Dr. L. L. Barber, Spitzer building, Toledo, Ohio, chairman for Ohio and Indiana.

Dr. S. Eschelman, 421 Franklin street, Buffalo, N. Y., or Dr. R. Murray, 715 Elmwood avenue, Buffalo, N. Y., chairmen for New York and Ontario, Canada.

Dr. M. F. Finley, 1928 First street, Washington, D. C., chairman for District of Columbia, Virginia and West Virginia.

Dr. T. P. Hinman, 22 South Broad street, Atlanta, Ga., chairman for Georgia, North Carolina, South Carolina, Florida, Alabama, Mississippi, Tennessee, Louisiana and Texas.

Dr. H. B. McFadden, 3505 Hamilton street, Philadelphia, chairman for Pennsylvania.

Dr. G. E. Savage, 518 Main street, Worcester, Mass., chairman for Massachusetts, Connecticut and Rhode Island.

Dr. S. H. Voyles, 3201 Washington avenue, St. Louis, Mo., chairman for Missouri, Arkansas, Kansas and Nebraska.

Those having new instruments, appliances, etc., are cordially invited to display them. Communicate with your State chairman or with

E. K. WEDELSTAEDT, *Secretary Clinic Section*,

204 New York Life building, St. Paul, Minn.

PARTIAL PROGRAM OF THE MISSOURI STATE DENTAL ASSOCIATION, TO BE HELD IN ST. LOUIS, MO., MAY 24TH, 25TH, 26TH, 1905.

PAPERS.

Dr. J. H. Kennerly, St. Louis, Mo.—President's address.

Dr. A. W. Thornton, Chatham, Ontario.—"Bridge Work; the Best Means of Avoiding an Undesirable Display of Gold."

Dr. John Q. Byram, Indianapolis, Ind.—"Some Phenomena Observed in Fusing Porcelain."

Dr. J. D. Patterson, Kansas City, Mo.—"Predisposition."

Dr. Edmond Noyes, Chicago, Ill.—"The Administration of Anesthetics by Dentists."

Dr. F. E. Cheeseman, Chicago, Ill.—"The Mistakes of the Past in Porcelain Inlays."

Dr. H. W. Loeb, St. Louis, Mo.—"Demonstration of the Relations of the Antrum of Highmore."

REPORT OF COMMITTEES—CLINICS.

Dr. A. W. Thornton, Chatham, Ontario.—"Table Clinics, Bridge Work."

Dr. William Conrad, St. Louis, Mo.—"Dental Hygiene."

Dr. H. Prinz, St. Louis, Mo.—"Pyorrhea."

Dr. O. J. Fruth, St. Louis, Mo.—"Gold Inlays and Burnish Tips."

Dr. W. L. Reed, Mexico, Mo.—"Bandless Gold Crowns."

Dr. W. M. Bourn, St. Joseph, Mo.—Subject to be announced.

Dr. L. C. Frazier, Palmyra, Mo.—Subject to be announced.

Dr. J. F. Wallace, Canton, Mo.—"Proximo-Occlusal Cavity in Incisor."

Dr. W. J. Lark, St. Louis, Mo.—"Pressure Anesthesia."

Dr. R. M. Burgess, Paris, Mo.—Subject to be announced.

- Dr. Charles D. Weakley, Lawson, Mo.—“Gutta Percha Denture.”
- Dr. Oscar Hammer, St. Louis, Mo.—Subject to be announced.
- Dr. D. J. McMillen, Kansas City, Mo.—“Bandless Molar Crowns.”
- Dr. E. P. Dameron, St. Louis, Mo.—Table Clinic, “Non-Cohesive Gold.”
- Dr. J. D. Patterson, Kansas City, Mo.—“The Perfect Adjustment of a Logan Crown.”
- Dr. T. E. Purcell, Kansas City, Mo.—“Root Canal Fillings.”
- Dr. U. G. Houghland, Kansas City, Mo.—Table Clinic, “Seamless Crowns in Bridgework.”
- Dr. W. M. Carter, Sedalia, Mo.—“Some Simple Ways of Lessening Pain.”
- Dr. T. L. Pepperling, St. Louis, Mo.—“Gold Fillings.”
- Dr. A. H. Brown, Hamilton, Mo.—Table Clinic, “Preparations of Cavity and Inserting Gold Filling in Artificial Teeth.”
- Dr. F. D. Worthley, Kansas City, Mo.—“Desensitizing Dentine.”
- Dr. H. H. Sullivan, Kansas City, Mo.—Table Clinic.
- Dr. L. A. Young, St. Louis, Mo.—“Pressure Anesthesia, Sealing Root Canal with Oleo Percha.”
- Dr. J. Robert Megraw, Fayette, Mo.—“Drilling Cavities in Porcelain Teeth.”
- Dr. Bert G. Price, Oregon, Mo.—“Gutta Percha Base Plates.”
- Dr. H. I. Bragg, Columbia, Mo.—“Retaining Rubber Dam Without the Use of Clamps.”
- Dr. W. F. Lawrence, St. Louis, Mo.—“Porcelain Crowns.”
- Dr. G. B. Winters, St. Louis, Mo.—“Extraction with Nitrous Acid.”
- Dr. B. E. Lischer, St. Louis, Mo.—“Orthodontia.”
- Dr. J. D. White, St. Louis, Mo.—“Porcelain Stames.”
- Dr. A. J. Prosser, St. Louis, Mo.—“A Practical Clinic.”
- Dr. J. F. Austin, St. Louis, Mo.—“A Contour Gold Filling.”
- Dr. O'Dench, St. Louis, Mo.—“Regulating Appliances.”
- Dr. O. H. Manhard, St. Louis, Mo.—“Retention of Loose Teeth.”
- Dr. F. E. Cheeseman, Chicago, Ill.—“Porcelain Restoration.”
- Dr. T. E. Turner, St. Louis, Mo.—“Porcelain Inlay.”
- Dr. C. D. Inkin, St. Louis, Mo.—“Orthodontia.”
- Dr. W. A. Roddy, St. Louis, Mo.—“Replacing Porcelain Facing with an Inlay.”
- Dr. F. K. Reem, St. Louis, Mo.—“Extracting with Nitrous Acids.”
- Dr. Berry, St. Louis, Mo.—Subject to be announced.
- Dr. De Courcey Lindsley, St. Louis, Mo.—“Suggestive Anesthesia.”
- Dr. E. Burgstresser, St. Louis, Mo.—“Hollow Gold Inlay.”
- Dr. R. O. Butts, St. Louis, Mo.—“Contour Gold Filling.”
- Dr. H. H. Hill, St. Louis, Mo.—“Demonstrating a Method of Making an Open-Faced Gold Crown.”
- Dr. John G. Harper, St. Louis, Mo.—“Setting a Logan Crown.”
- Dr. F. F. Fletcher, St. Louis, Mo.—Will demonstrate the necessity for using different mallets on the same filling.
- Dr. F. E. Roach, Chicago, Ill.—“Method of Attachment for Partial Plates and Removable Bridges.”
- Dr. G. W. Musgrave, Ash Grove, Mo.—Table Clinic, “How to True Carborundum Wheels.”
- Dr. W. M. Berry, St. Louis, Mo.—Table Clinic on prosthetic work.
- Dr. D. O. M. Le Cron, St. Louis, Mo.—Porcelain Clinic.
- Headquarters, Hotel Jefferson. Rates: Room without bath, \$1.50 and up; two in room without bath, \$1.00 and up each; room with bath, \$2.50 and up; two in room, with bath, \$1.50 and up each. European plan only.
- A rate of one and one-third fare has been secured on all railroads.

THE DENTAL REVIEW.

VOL. XIX.

CHICAGO, JUNE 15, 1905.

No. 6

WHAT SHALL THE GENERAL PRACTITIONER DO WITH THE FIRST PERMANENT MOLAR BETWEEN THE AGES OF EIGHT AND TWELVE.*

BY J. E. HINKINS, D. D. S., CHICAGO, ILLINOIS.

NOTE.—The models and teeth for illustrating this article were unfortunately burned in a disastrous fire at the engravers, and it has been found impossible to reproduce them. This is greatly to be regretted, as it detracts much from Dr. Hinkins' article, but it is one of those occurrences over which no one seems to have control.—THE EDITOR.

A careful review of the literature confirms the fact that the trend of opinion among orthodontists is in favor of preserving the first permanent molar, if it is at all possible to do so, inasmuch as it is regarded by them as the keystone of the arch. Other teeth may be sacrificed, but not the first molar. The question arises in my mind whether that is the correct stand to take in all cases. For instance, what shall the general practitioner do in the case of a child of a very nervous disposition, one who shrinks from pain, and whose family physician advises against prolonged and more or less painful regulation of the teeth with regulating appliances?

We must all appreciate that it is impossible to lay down a set of rules that are applicable to all cases. The fundamental principle of dentistry is conservatism, and if that is true, should we not at all times do that which is best for our patient? Is it better and more profitable to extract poorly developed teeth in order to make room in a crowded arch, or to devitalize such teeth and fill them, the operation being accompanied with considerable suffering to the patient, and entailing more or less inconvenience for some time? Again, cases come to us whose parents are totally indifferent to such a procedure, or they are unwilling to pay for it, or they don't want it done. Most regulating appliances, too, are cumbersome, inconvenient, inflicting,

*Read before the Odontological Society of Chicago.

perhaps, some pain, and oftentimes causing serious gastro-intestinal disturbances. I have in several instances been called in to remove a regulating appliance because of its interfering with the digestion of the child.

What is the best course to pursue where the teeth are badly decayed, and the pulp is exposed; where the jaw is not in proportion to the teeth; where it does not give sufficient room; or where the teeth are irregularly placed and crowded? It is our duty to the parents of the child to examine such cases carefully before arriving at a decision, advising only that which is best for the child, even though such advice may not be in conformity with orthodontial principles. I believe it is at all times preferable to substitute teeth of good quality for teeth of bad quality.

Let me cite a few instances in point, and then I will leave it to your judgment as to whether I did the best for these patients. The first patient was a little girl of an intensely nervous disposition, with an hereditary neurotic taint, the teeth being exceedingly soft and chalky, the arch crowded. She was suffering more or less pain and inconvenience all the time. I tried to preserve the first molars, but found that the child's nervous condition was not equal to the strain. I extracted both first permanent molars in the lower jaw and the first molar in the upper jaw on the left side, and the first bicuspid on the right side. The result has been exceedingly satisfactory, not only as to the physical well being of the patient, but also so far as occlusion and the integrity of the arch are concerned. That was fifteen years ago, and but few of the remaining teeth have decayed since then.

A younger brother of this patient had a similar condition. I extracted all the first permanent molars in both the upper and lower jaws, with the same satisfactory result.

The third case was a little boy suffering from rickets. He was unable to walk up to the age of four years. His teeth were very soft, and in bad condition generally. A regulating appliance had been made for him some time previously, but because of its inducing severe gastrointestinal disturbances it had to be removed. I extracted the teeth and the result is a fairly satisfactory one. The upper arch is well formed, but the lower arch is slightly contracted. However, the occlusion is good, the boy is free from pain, and his physical condi-

tion has been improving steadily, so that, on the whole, the result is good.

The next patient was the child of rheumatic parents. His teeth were in very poor condition. In three of the first permanent molars the pulp was exposed. Two of them were so far gone that nothing could be done with them. I extracted all the first molars and the result was eminently satisfactory.

I treated the fifth case for some time, but found it impossible to save the teeth, unless I devitalized them. Rather than do that and put on a regulating appliance, I extracted the four first permanent molars. The decay ceased, and the arch is as good as can be expected.

The sixth case was also a very bad one. It was impossible to do anything for the patient in the way of regulating the teeth. The arch was awfully crowded, and, furthermore, the molars were badly decayed. I extracted the first permanent molars, and obtained a very good occlusal result, although the arch is somewhat crowded. Still, I feel that a better result could not have been obtained in this case unless the whole arch was expanded and the bite changed entirely, to which the child's mother objected most seriously on account of pain and expense.

The next case is very similar to the third one I cited. The little girl began to menstruate at the age of twelve, and always suffered considerably. Her family physician recommended that nothing should be done that would in any way aggravate her condition, and to keep her as free from pain as possible. I extracted the first permanent molars, and the result is a fairly satisfactory one.

The last case I will mention is that of a little girl whose teeth show many soft, yellow, chalky spots. She always complained a great deal of her teeth troubling her. She said that they felt on edge; that she could not chew; that she wanted to scratch them, as if they itched. I did all I could to save these teeth, but eventually was obliged to extract the right upper and lower permanent molars at the age of eleven, and one year later I extracted the upper and lower molars on the left side. All the symptoms of which the child complained disappeared promptly, and she has never had any trouble with her teeth since.

The question in my mind was whether it was better to extract

these permanent teeth and let the others come in, as they have, or whether I ought to devitalize and fill them, so as to save them for a few years, and then would have to extract them later. I believe the result I obtained in this case justified the steps I took. The bite is good; the arch is good; the occlusion is good, and the patient feels entirely well.

In all these cases decay has been checked, the remaining teeth being well developed and intact. An examination of some of the teeth that I have extracted in these cases will convince you that it would have been impossible to save them, because of the maldevelopment of the roots. The apical foramen, in many of them, is wide open, and I leave you to imagine what the result would have been had I attempted to fill those root canals.

I sincerely believe I have given the best treatment in these cases.

PRESIDENT'S ADDRESS.*

BY C. N. JOHNSON, L. D. S., D. D. S., CHICAGO, ILL.

It is customary for the president's address to deal somewhat with the progress of the profession during the year, but in view of the fact that the committee on dental science and literature has for its chief function the consideration of all published matter related to advances in dentistry, and also that at this particular time in the history of our society we are looking more to the future than to the past, it is deemed desirable that the president's address consider something pertaining to the benefits of society work for the profession and the individual, with a special reference to the possibilities of our own society in its new reorganization plan.

If we study carefully the history of dentistry we shall see that the real progress of the profession began only when men came together in mutual intercourse of thought. It is true that a few names here and there stand out among the dentists of those early days on account of the distinguished individuality of the men bearing them, but so far as the broadest possible benefit to humanity is concerned we see no marked impression made till the organization of societies. It is undeniably

*Read before the Illinois State Dental Society, Moline, Ill., May 9, 1905.

true that man never has and never can accomplish so much individually as collectively. This is manifest in every walk of life, and it is especially evident in all the great reform movements in the history of the world. A hermit never accomplished anything of note, at least not until he abandoned his hermitage and came out and mingled with the great throbbing mass of humanity about him. He may study plans and formulate ideas in his seclusion but the attainment, the fruition, must come in the midst of his fellow men. And, after all, to be a hermit is unnatural. As Plato has truly said, "Whosoever is delighted in solitude, is either a wild beast or a god." Few men are sufficiently godlike to profit much by the restriction of their own companionship. Luther never could have worked the lasting reforms he did if he had not come out of the monastery and moved freely among men. It is the clash of intellects which develops the individual.

No man can become really great or useful by merely reading, even though he read the best there is in literature. He may learn much, in fact, he may fill himself with knowledge, but something else is required to round him out into a normally developed individual. As Bacon puts it, "Reading maketh a full man, conference a ready man." And it is this readiness of conception, this stimulus of other minds, which we all need to stir us out of the rut of self-opinion. If we live much to ourselves we are inevitably inclined to a narrow view of life and its possibilities, and—particularly if we are egotistically disposed—we are certain to magnify our own importance, and place too much significance on our own personal point of view. It is only when we encounter the opinions of others as expressed in the dignity of debate or the freedom of social intercourse that we are brought to realize the significance of man's true relationship to his fellow men, or our own proper and normal status in the affairs of the world. In other words, to put it in more homely phrase, we need the friction of the world to round off some of the rough corners of personal peculiarity, and make of us a more finished human product.

This is not saying that the association will make us all alike. Pity the plight of humanity if the time ever **came when we were all** molded in the same groove. A man's individuality will stand out as prominently under association as if he were left to himself, the only difference being that with association the more profitable points of his individuality are likely to be developed, while the profitless ones are usually submerged and blotted out.

Viewing the matter in this light the argument is very strong for the organization of dentists into associated effort. There can be no plausible contention against it, and there are many forcible reasons in favor of it. One of the first benefits which naturally occurs to us is that which reverts to the profession itself, individually and collectively; but there is after all a greater good even than this, which we are sometimes inclined to overlook. In the broadest sense there is no doubt that the chief benefit of dental societies reverts to the public at large, through the better performance of dental service. We do not often enough consider the matter in this broad humanitarian point of view, and yet this is really the only light in which it should be studied. There should be no element of selfishness in our society work and if we labor solely for the general good we shall find ourselves broadening out into the best possible development both as individuals and as a profession.

Recognizing the community of interests between the profession and the public it is easy to trace many ways in which our meeting together may be mutually beneficial. It is not solely in the direction of scientific study that the association's function is limited. If we are to take our proper place among the professions of the world, and command the respect to which we as professional men are entitled, we must make some impress on the public aside from that which they receive as patients in our offices. It is true that our individual proficiency and poise while in the performance of our routine duties at the chair will have its due effect in creating a certain degree of admiration for our ability, and if our demeanor is always consistent with the traditions of a perfect gentleman we shall reap the reward of individual respect. And yet there is something besides this needed to give our profession as a whole its proper status. We must be able to make our influence felt *en masse* instead of individually, and in no way can we accomplish this except through organization. A meeting such as we are having at this time, with the program full of scientific subjects, and a clinic list embracing most of the important operations in dentistry, with an assemblage of dentists running into many hundreds and all earnestly engaged in the consideration of questions relating to the welfare of humanity, can not fail in its effect upon the people of this particular vicinity or even in a reflex manner upon the people of the State.

There is something commanding about a large body of men met together with mutual objects and aims, and all earnestly working for the furtherance of their cherished ideals. No community can sit passive under such a spectacle as this, and the result is that an impression is made upon the people which raises dentistry in their estimation, and brings us one step nearer the ultimate appreciation to which our services to humanity should justly entitle us.

And in this connection, as has so frequently been stated, when we succeed in having a truly representative organization of dentists in our State we can with better grace and surer success go to the legislature with any measure tending to the protection of the people in dental matters and be certain of at least a respectful hearing. For whatever else may be said or whatever innuendoes may be thrown out as to our motives in meeting, there is one thing generally recognized and that is that the best men in the profession are to be found engaged in society work. There is no spirit of egotism in referring to this because no observant man will deny that the advances in dentistry have come through the agency of members of dental organizations, and the people recognize this as well as the profession. It is natural that the best thinkers in any calling should gravitate toward each other, for as Addison says:

"Great souls by instinct to each other turn,
Demand alliance, and in friendship burn."

Not that dentistry contains many men of great mental capacity of a character to grasp the immense problems of statesmanship or literature which move the world. The nature of our calling is such that we do not attract this type of men, and yet the character of our work, in its ultimate benefit to mankind, is sufficient to command the most pronounced recognition on the part of the people and of the people's representatives, the legislature. And it will command the recognition when we move in a body in the furtherance of any project, instead of applying in small coteries or merely as individuals.

But there is another reason why we should meet in dental organizations aside from the effect it will have on outsiders, and that is the effect it will have upon us as members of the profession. If there is any calling in the entire category which needs the broadening influence of associations it is the practice of dentistry. To shut a man up in a dental office the year round and let his environment be

pervaded by the odors of the vulcanizer and such drugs as carbolic acid, creosote, iodoform, etc., and let him come in contact with no one but his patients in a professional way, dealing all the while with the small things of life and listening continually to the petty complaints and ailments of a too often peevish clientele—such an experience is to dwarf a man's mental capacity and narrow his point of view to the extent of actually limiting his usefulness in the world. It is really a very serious matter for a man to so handicap himself by environment as to become narrow minded, pessimistic, suspicious of his fellow men, and altogether an incubus instead of a help to humanity. Every dentist owes it to his very manhood to cultivate association with his fellows, and not only that but he owes it to his profession. He ought at least to help in some small way to perpetuate the heritage to which he has fallen heir, and if he has taken freely of the knowledge which others have furnished for his benefit he should strive to aid in every movement tending to the betterment of his profession.

Nor will it longer do to hedge behind the plea of inability. Some men assume that they are unfitted to take part in society work, because they can not write papers, or give clinics, or make speeches. It matters not one whit whether a man can do any of these things or not, he may be just as useful in other ways. He may be a good committee man, a good organizer, a good worker, or even, he may be—not the least of all—a good listener. No man need feel himself out of place in a society provided he has in his heart a common sympathy for his fellow workers, and if he has not this he needs association all the more to develop it. I pity a man from the very bottom of my heart who is so constituted that he cares not to mingle with other men, and particularly with men of his own craft.

And yet we should not misjudge a man who holds aloof from society work. It is sometimes a case of pure diffidence, often generated by a sensitive nature, and requiring the most careful nursing and encouragement to bring out the better nature which usually accompanies such a temperament. It would sometimes seem as if the world was made up largely of misunderstandings, and with this type of people in particular the opportunity for misunderstanding is so great that the wonder is that they are ever understood.

And this recalls the duty which society members owe to those

who are on the outside and particularly to those who have just entered society work. In our own State we have under our reorganization plan gained a large additional membership. It is safe to say that we have today in this society more than double the number of members belonging to any other dental society on the continent, and we hope in the future to increase this by many more. This brings with it not only additional honors and congratulations but additional responsibilities. The increased work to be done in maintaining such a large body must be as equally distributed among the members as possible, and the new men coming in must be given full representation in this work. But the chief burden of assimilation must fall upon the older members, and it is this particular feature to which I wish most urgently to call your attention.

In the adoption of the reorganization plan the older members of the society virtually sent out an invitation to all reputable men in the State to become members of the State organization. This was done in the broadest feeling of professional brotherhood, and the most gratifying manner in which the invitation was accepted is proof of the fact that it was so interpreted by the profession. Now that the new men are identified with us and have come out to attend the meeting, many of them for the first time, it becomes our duty, practically in the capacity of hosts on this occasion, to enter heartily into the spirit of hospitality and make all the new members feel as much at home as if they had been working with us always. Let every man who has ever attended a meeting before consider himself obligated to seek out the new members, get acquainted with them personally and introduce them in a way to make them feel as if they are really and truly among friends. Let this social acquaintanceship be a prominent feature of the meeting, not, of course, to the detriment of the scientific part of the program, but to the end that all the members, old and new, shall feel that they are at home when they are attending our annual meetings.

And in this connection I should like personally to extend at the opening of the session a cordial word of welcome to all present and particularly to those who are in attendance for the first time. I hope it shall be possible before the close of the meeting to greet you all personally, and in any event I have the suggestion to make that you feel free to introduce yourselves to the officers and older members

of the society, so as to at once become assimilated among us. We trust also that you will take an active part in our deliberations and identify yourselves heart and hand with us in all of our work. Do not allow any false sense of diffidence or newness to deter you from freely becoming part and parcel of the society. From this time forward please remember that this is your society, and its interests are your interests, and its future rests largely with you.

We are confidently looking for a general revival of associated effort in this State, and no small part of this confidence is fostered by the knowledge of the new blood we are injecting into our State society. But it will not suffice that we simply get the new blood in—it must be properly assimilated in order to be of service. And it is to this assimilation that I now invite your cordial co-operation. Let us each and every one work together with the sole purpose of making the reorganization idea a permanent and accomplished success, and in doing this we shall make history for dentistry in Illinois in a way that, with all her past achievements, the future will show even greater progress than has ever yet been made in the entire forty-one years since the organization of this society.

NON-ERUPTION OF TEETH DUE TO IMPACTIONS.—THEIR LIBERATION AND RESTORATION.*

BY CALVIN S. CASE, M. D., D. D. S., CHICAGO, ILL.

The failure of certain permanent teeth to erupt long after their normal periods of dentition, and which lie imbedded wholly or partially in the alveolar process, have long been sources of unhappy conditions that have demanded the highest order of skill to remedy.

Since the discovery and development of the Roentgen ray, many of the difficulties which formerly confronted the operator have been removed. It is now possible to determine with certainty the presence or absence of a missing tooth that is suspected of being impacted, and which gives no outward indication of its presence. The ordinary skiagraph will also usually give a very fair idea of its relative position and location to one who has become conversant with the peculiar

*Read before the Chicago Dental Society.

shadow distortion which the ray is liable to throw upon the plate—as will be shown.

Occasionally the X-ray will expose certain causes for the impaction that would otherwise be unknown, and which, if removed, will permit the tooth or teeth to erupt, sufficiently, at least, to allow the attachment of force devices for its final adjustment in the arch. I refer particularly to supernumerary teeth and odontomata which are wholly imbedded in the process in such a manner as to prevent the eruption of the normal tooth and yet produce no appearance of the overlying gum to indicate their presence, as will be illustrated later.

In my practice limited to orthodontia, the teeth most liable to



Fig. 1.

become impacted are, (1) the upper cuspids; (2) the lower second bicuspid; (3) the upper central incisors, and (4) the upper lateral incisors. I am aware, however, that the lower third molars through natural conditions are perhaps far more liable to become impacted than any of the other teeth; and that the upper third molars, upper second bicuspid and lower cuspids, are occasionally in this condition.

Since writing the above I find that Dr. Cryer, in a paper published in the January *Cosmos*, entitled "Retarded Eruption of the Teeth. Their Liberation and Extraction," places the order of fre-

quency of impacted teeth as follows: (1) the lower third molars; (2) the upper cuspids; (3) the upper third molars; (4) the upper central incisors; (5) the lower second bicuspid; (6) the upper second bicuspid, and (7) the lower cuspids. His opinion should receive respect, based as it is largely upon an examination of numberless clinical cases and dried skulls.

The common cause of dental impactions is the absence of room in the arch for their free eruption. The spaces between the second molars on the one side, and the rami and tuberosities on the other, which are at present rarely more than sufficient in Caucasian races, for the free eruption of the third molars, seem to be gradually di-



Fig 2.

minishing through a foreshortening of the jaws under the forces of evolution. These spaces which are naturally produced for the third molars in the final development and growth of the jaw, are frequently encroached upon by slight retruding movements of the buccal teeth through the forces of mastication seeking occlusal interdigitation of the cusps. This may be one of the principal causes for the retarded eruption and impaction of these teeth.

Dr. Cryer, in a paper published in the *Dental Cosmos* of September, 1904, has pointed out the dangers of a considerable distal movement of the buccal teeth to correct occlusion, which has been recently advocated as an advanced step in orthodontia, but one which

could only be practiced in a thoughtless disregard of the physiological demands for the normal eruption of third molars.

A frequent secondary or concomitant cause for the impaction of lower third molars and other teeth, particularly the upper cuspids, is doubtless the deflecting influence of impinging roots of adjoining teeth, which the crowns of the erupting tooth come in contact with at a time when, its roots being uncalcified, the crowns are easily deflected from their true perpendicular positions and growth movements. This turning of the crown from its true course, which with



Fig. 3.

upper cuspids seems to be principally caused by the root of the deciduous cuspid, can not well help but divert and misdirect the forces of resorption which are necessary for the growth movement of the tooth, and which tends always to project it along the line of its central axis. Moreover the malposition which may commence at first with a slight deflection is probably further enhanced by the vis-a-tergo forces of eruption and root development. This would seem to be true in those frequent cases of impacted upper cuspids which lie imbedded nearly or quite parallel to the occlusal plane, with their crowns just back of the incisor roots, and also in those more rare

cases of inverted impactions of third lower molars whose growth carried them downward rather than upward, which would indicate that the malinclination had principally, if not wholly, occurred before the roots were developed, and that the resorptive, eruptive and developing forces had all tended to carry the tooth forward along the misdirected line of its growth. See Figures 1 and 2, which were kindly loaned to me by Dr. Cryer.

In a very large proportion of the impactions of lower third



Fig. 4.

molars, they lie in a decided mesial inclination, frequently parallel with the occlusal plane, and with their occlusal surfaces resting against the distal surfaces of the roots of the second molar and frequently with the points of the cusps locked in the disto-cervical depressions. (See Figure 3, Cryer.)

When *first* lower molars are naturally or artificially retruded at an early age, the crowns of the second molars, whose roots may not be wholly calcified, are pressed back with an inclination movement. It would seem, in this distal movement and inclination of the sec-

ond molar, that the overhanging distal surface of its crown and root, impinging and pressing down upon the mesio-occlusal angle of the third molar crown, which at twelve years of age lies imbedded in the apical zone without roots and with its crown already mesially inclined, would tend to hold it down at that point, while the eruptive forces would tend to lift the distal portion of the crown and turn its occlusal surface forward against the second molar. The ultimate calcification of its roots in that position causes them to extend back



Fig. 5.

beneath the angle of the ramus, with an impaction of the tooth which often demands a severe surgical operation for its removal.

If at eight or nine years of age the first lower molars are forced back half the width of a cusp, as has been recommended, for the purpose of attaining a normal occlusion, the unerupted second molars whose roots at that age are uncalcified, are doubtless retruded bodily to an *unnatural* position in the jaws; and in that position the final development of their roots *may* cause them, through this influence alone, to become so engaged with the mesio-occlusal surfaces of the

third molar crowns, that impaction of these teeth, which would not have otherwise occurred, will result.

Dr. C. N. Pierce, on page 646, Vol. III, "American System of Dentistry," truly says: "An impacted third molar at the base of the coronoid process is capable of giving as much excruciating and per-



Fig. 6.

sistent suffering as is possible for human nature to endure. Indeed there is no abnormality or lesion coming in the province of the oral surgeon which demands more prompt action, or for the time more thoroughly taxes to the utmost his best judgment and skill. The removal of the anterior molar is often indicated for the purpose of

giving relief; indeed when the third molar is imbedded so that it can not be reached, it is the only remedy." The many serious difficulties and dangers that have arisen from impactions of third molars should be well considered before blind and thoughtless attempts are made to apply the intermaxillary force to the teeth of youths of ten-

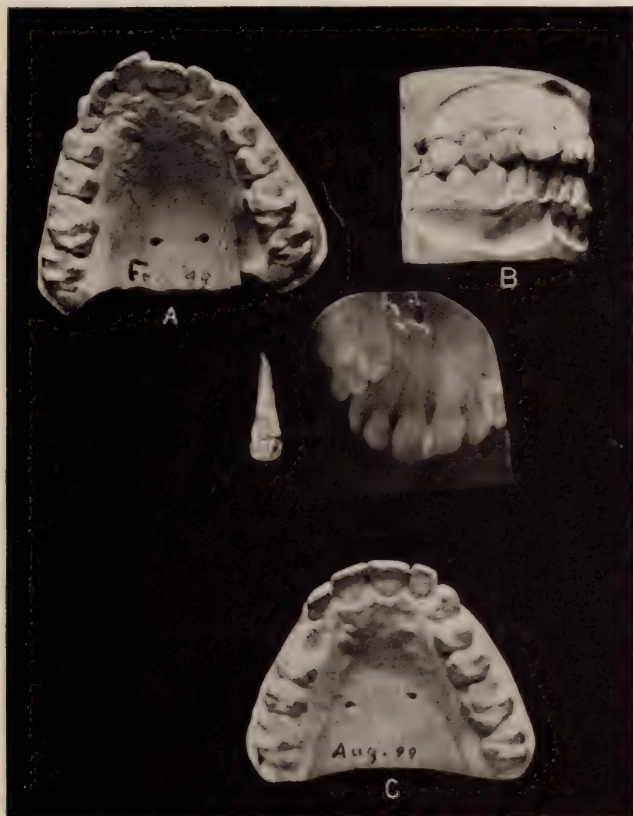


Fig. 7.

der age, in a frantic endeavor to produce a typical occlusion in cases of inherited disto-mesial malocclusion.

The models with accompanying skiagraphs, etc., of the twenty-six cases comprising thirty-seven impacted permanent teeth that have fallen to my practice principally within the past six years, I have caused to be neatly mounted for your examination after the lan-

tern exhibit. Of these some of the most interesting cases will be thrown upon the screen.

It will be seen of the impactions that thirteen are upper cuspids, eight are upper central incisors, four are upper lateral incisors, eleven are lower second bicuspid, and two upper second bicuspid.

Of the cuspids, ten were accompanied, up to the date of presentation, with the preceding deciduous cuspids, nearly all of the



Fig. 8.

roots of which were not decalcified. It may be that the roots of deciduous cuspids, which from some cause the resorptive forces do not attack, are the principal cause of the impaction of cuspid teeth. Again, the deflection of the crowns may originally arise from some other cause which enables the projecting forces of growth to carry them so far to one side that the decalcification of the deciduous root does not occur. Thus the deciduous cuspids not being shed and

remaining firmly seated in their alveoli, are probably allowed to remain because of the doubt which arises as to the presence of the permanent cuspids, which only the X-ray is able to definitely determine.

Two of the cuspid impactions were caused by the presence of supernumerary lateral incisors, and one by the premature loss of the

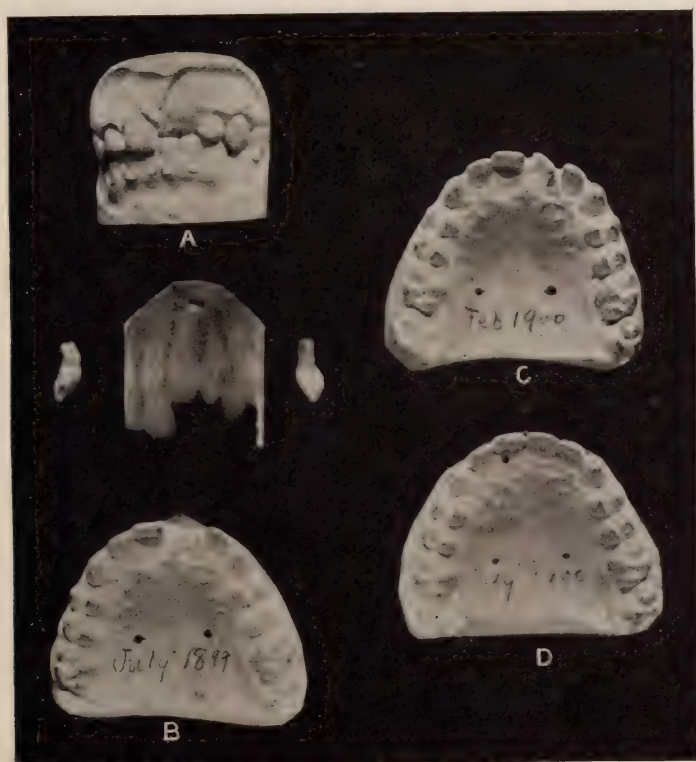


Fig. 9.

deciduous cuspid which permitted the adjoining teeth to close the space. In nearly all malpositions of adjoining teeth of the last character—which are quite common—the involved cuspids will usually erupt either in lingual or labial malalignment.

Of the impacted central incisors, three were caused by the presence of wholly impacted supernumerary teeth; three by erupted supernumerary incisors, and two by odontomata.

Of the impacted lateral incisors two were caused by supernumerary teeth, and two from premature loss of the deciduous laterals.

Of the impacted second bicuspid, ten were caused by the premature loss of the second deciduous molars, and one by the delayed extraction of the second deciduous molar. This last character is



Fig. 10.

quite commonly observed by dentists. In the thirty-five years of my private and clinical practice, I presume that no less than fifteen cases of impactions from this cause alone have presented.

When a second deciduous molar is not thrown off by the eruptive forces of the second bicuspid, the growth and crowding nature of the adjoining buccal teeth will cause their crowns to overhang and entrap it in their dovetailing inclinations until it is forcibly extracted.

If, as in all cases of this character which I have observed, the roots of the deciduous molars are completely decalcified, it is not difficult to force the crowns out through the buccal or lingual interproximate spaces—the impacted bicuspid being found immediately beneath.

In this connection it is interesting to note the difference in the growth altitudes of the deciduous and advanced permanent occlusal planes.

In all cases where the teeth impacted are necessary for the perfection and preservation of the dental arch, every means should



Fig. 11.

be employed to restore them to their normal positions. The treatment should consist, first in a removal of the causes and all obstructions to their free eruption. Where adjoining teeth partially or completely close the space, the proper appliances should be attached for opening it, and correcting the concomitant malocclusion. Deciduous and supernumerary teeth and odontomata should be removed, and the overlying gum and process freely cut away so as to expose at least the occlusal portion of the crown. If the tooth is imbedded deeply in the process it may require several operations to keep the wound open. The inflammation that ensues is necessary for the stimulation of the eruptive forces, which having lain dormant for years are slow to be aroused to renewed activities of tooth growth.

With youth, after the obstructions to the growth of impacted teeth that are not greatly inclined, are removed and the channels of eruption kept open, without other aid they will usually erupt to a sufficient degree at least to enable the placing of lightly attached bands or caps arranged for the attachment of rubber ligatures to co-operating appliances. If the tooth is found to be much out of position or decidedly malturned or inclined, more firmly attached bands can be placed later to permit the application of positive forces.

With older patients it may be found impossible to arouse natural growth movement; or the position and inclination of the impacted tooth may be such that the propelling direction of its growth movement is of little use, even if possible. In either event the application of artificial force will be found necessary; and as its position precludes the possibility of a band attachment, a small hole may be bored into the crown to attach a hook for a rubber ligature. But this should never be attempted until the crown is sufficiently uncovered to determine the relative position of the tooth and the exact anatomical area of the exposed surface, in order that the hole be bored at a point that will not ultimately deface the tooth when filled and particularly to avoid endangering the vitality of the pulp.

With impactions of the labial teeth, to which these precautions only apply, a point for the pit should be chosen on the lingual surface of the crown, at a point, so that the drill may be directed safely as regards the pulp, and if possible, at right angles to the direction of the required force, in order that only a moderate depth will be necessary to insure the stability of the post hook. The choice of position may also be influenced by the possibility of the force producing an unnecessary or necessary rotation of the tooth in its movement to place.

With teeth that are so deeply imbedded that visual examination is not possible, these requirements often demand a most careful and intelligent indirect digital diagnosis, with an instrument calculated to sensitively impart the character and anatomical conformation of the freed area.

IMPACTION OF SECOND BICUSPIDS.

Fig. 4 shows models and skiagraphs of a boy fourteen years of age. The premature loss of the second deciduous molars had per-

mitted the adjoining teeth to completely close the spaces for the second bicuspid, as shown by Model "A." The accompanying skiagraph shows the impacted bicuspid. The proper appliances for opening and retaining the space and correcting the malocclusion were attached, which caused the impacted teeth to erupt as seen in model "B." As this case practically illustrates the common cause and results of impactions of this character, it will not be necessary for me to show with the lantern any of the other nine impactions of second bicuspid from this cause, the models and skiagraphs of which are here for your examination.

IMPACTION OF UPPER CUSPIDS.

Fig. 5 is from the models and skiagraphs of a miss fourteen years of age. In an examination of model "A" which represents the case when presented, there will be found no abnormal prominences of the gum surface to indicate the presence of the permanent cuspids.

It is important to note in this and other cases to be shown, the shadow distortion of the position of the impacted teeth which the ordinary skiagraph is liable to produce. Here they have the appearance of lying imbedded in the process at an inclination of 45° as compared to the normal, and with the apical ends of the roots quite distally located.

In model "B" which shows the cuspids as they naturally erupted after the removal of obstructions, and model "C," after their malpositions are corrected, they are seen to be in perfect inclination, in relation to the normal, a position which they could not have attained had their roots been located as indicated by the skiagraph. This is far better shown by the models of this case.

Fig. 6 is from models of a gentleman about twenty-five years of age. Slight prominences of the gum surface indicated the presence of the impacted cuspids. The skiagraphs show them in the same apparent mesial inclination as in Case 2, but which their forcibly erupted positions, shown by model "C," by no means confirms. It would have been impossible to have turned these teeth to the nearly or quite normal inclinations shown by the model, had they been imbedded in the process in the position which the shadow distortion of the X-ray shows them. In this case the projecting forces of eruption had carried the points of the crowns well forward toward the lingual

aspect of the central incisors, demanding quite a decided distal movement in lifting and forcing them into alignment. One of the hooks for the attachment of the elastic force is shown on the right cuspid of model "A" just as the tooth is emerging from the gum. Model "B" shows the cuspids sufficiently erupted to place bands for the attachment of lingual reciprocating jacks for the final rotation and lateral movement of the crowns into alignment.

Fig. 7. Miss —, sixteen aet. Two fairly well formed upper laterals and no cuspid on the right side, are shown in the beginning models "A" and "B." No prominence of the gum indicated the presence of the missing tooth. The supernumerary is plainly located as the one next to the central by its larger size and slight difference in shape as compared to the other two laterals. Notwithstanding the fact that the supernumerary was badly disfigured by a yellow depression across its labial face, shown by the preserved tooth and models, no one of the good dentists who cared for her teeth thought to look for an impacted cuspid by the aid of the X-ray. As shown by model "C," the supernumerary was removed, the distally located lateral was forced forward to place, and the cuspid in a partial state of eruption is ready for the final adjustment.

IMPACTION OF UPPER CENTRAL INCISORS.

Fig. 8, Miss —, aet fourteen. Model "A" made from impression at presentment, shows no prominences of the gum surface to indicate the presence of the missing incisors. The skiagraph shows the two central incisors above, and also two impacted supernumerary teeth imbedded below them. Below these is seen the right lateral which marks the occlusal plane. The skiagraph plate, unfortunately, was cut too narrow to show the left lateral. The extracted supernumeraries are seen on each side of the skiagraph. Model "B" shows right incisor in partial state of natural eruption and the left incisor ready to burst through the gum.

Fig. 9 shows models, etc., of a boy thirteen years of age. Models "A" and "B" represent the appearance of the case when presented. The right linguo-incisive alveolar ridge is somewhat prominent but hardly sufficient to assure the presence of the missing incisor, which is seen in the skiagraph wedged between two impacted supernumerary teeth. These were extracted and are now shown on each side of the skiagraph. Model "C" shows the incisor in a partial state of natural

eruption after the obstructions were removed. At this time appliances were attached for its regulation with a final result shown by Model "D."

Fig. 10. Miss —, aet seventeen. Model "A" and skiagraph on the left shows dental arch and location of the impacted incisor. By carefully observing the latter the shadow of a small dense body is seen to lie at the incisal edge of the impacted tooth in the pathway of its natural eruption. This proved to be an odontoma about half the size of an incisor crown which was loosely imbedded in a partially absorbed area of the process, and having no power of its own to erupt and composed of a structure that resisted the resorptive elements, it remained as a permanent obstruction to the natural growth of the impacted incisor. Its irregular surface studded here and there with enamel prominences demonstrated at once its germinal tooth structure. I regret that it was not preserved.

The patient living out of the city, I was unable to see the case for a year after the first operation. As the tooth at this time presented no signs of erupting, the second skiagraph on the right was made, which shows the incisor in a somewhat advanced stage, but evidently retarded in its growth by dormant physiologic processes or obstructed by the overlying secondary dense tissue which closed the original wound. This was freely removed as before. In another year the case again presented with the incisor sufficiently erupted, as shown by model "B," to attach a band and appliances for its final correction as in model "C."

Fig. 11. Miss —, sixteen aet, of recent presentment. The surface appearance of the surrounding gum as shown by the model gave no indication of the impacted incisor, which in the skiagraph is seen to be obstructed in its physiologic eruption by an odontoma located at its mesio-incisal edge. This was removed—with the overlying process—and can now be seen at the right of the skiagraph.

The models of these cases and others which I now present for your examination will more perfectly demonstrate the various characters of impactions and the results of treatment, than it has been possible for me to describe and illustrate with the lantern. Let us hope that familiarity with the advantages presented by the possibilities of the X-ray will lessen the number of cases of unnecessarily lengthy impactions after the natural ages of eruption.

SEVEN PECULIARITIES OF THE LEFT SIDE OF THE MOUTH.

BY L. P. HASKELL, CHICAGO.

For twenty-five years I have called attention to seven distinct peculiarities of the *left* side of the mouth, seeking a solution of the problem, but as yet have not found a satisfactory one.

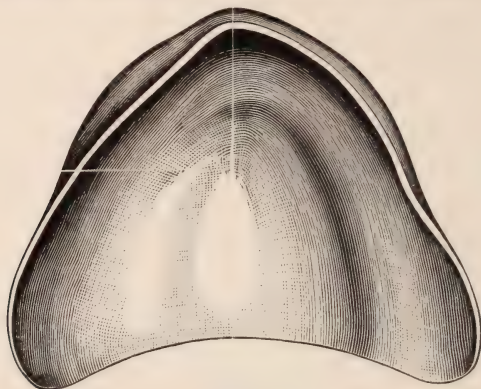


Fig. 1.

As there are many dentists who have not had their attention called to these peculiarities, I will again enumerate them with illustrations, as they have more or less to do with the arrangement of

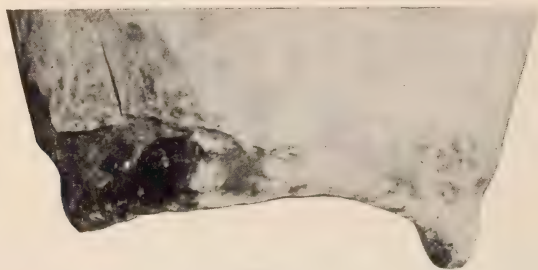


Fig. 2.

artificial teeth and gums, hoping some one will furnish a satisfactory solution of the cause.

I. In 95 per cent of edentulous upper jaws there is a peculiar depression over the left cuspid eminence requiring more fullness of artificial gum. Fig. 1.

II. In a great majority of cases the alveolar process is shortest

on the left side, below the cuspid eminence, necessitating the arrangement of the teeth lower than on the right side. Fig. 2.

III. In 98 per cent of jaws the tuberosity is lower on the left, often to a great extent, requiring shorter molars, and often not room for second molar. Fig. 3.

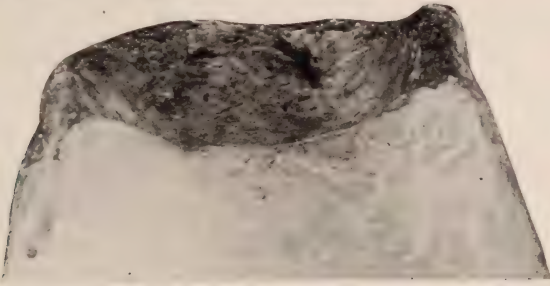


Fig. 3.

IV. In very many mouths the lip rises highest on the left side in talking and laughing, causing the teeth to *appear* too long, while the arrangement should be parallel with the lip at rest.

V. On the lower jaw the teeth in many cases are higher and more prominent on the left side, making it difficult to avoid arranging the upper teeth too short. Fig. 4.

VI. The left side of the lower jaw often diverges further from

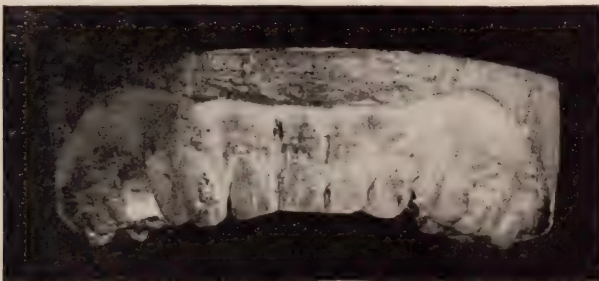


Fig. 4.

the median line than the right, necessitating setting the teeth further over the ridge.

VII. It is often the case that there is more absorption of the left side of the lower jaw.

I have sought in vain for the cause of these peculiarities. Can any one solve the problem?

DIET IN HEALTH AND DISEASE.*

BY A. B. SPACH, A. M., M. D.

I know a man, and knew him when he was a child, who, whenever he partook of egg or any food prepared with egg, became violently ill. I have seen him writhe in agony many times from eating a light dessert in which egg was incorporated in its preparation. His parents thought for a long time that it was only a notion on his part, but oft repeated experiences, many of which were excruciatingly painful and sometimes fraught with alarm, caused him eventually to desist from eating at all of egg or any food prepared with egg. What is there peculiar to the egg, or unusual in this individual, that brings about this lack of harmony or lack of comfortable well being whenever egg is eaten? I have a baby under my care who is now a little over a year old, and who, whenever he takes milk, no matter how carefully modified or prepared, becomes restless and irritable and refuses to thrive. We know that one person is poisoned by a dose of belladonna or morphine which would be beneficial to another. I once administered $\frac{1}{8}$ -grain of morphine guarded by 1-150-grain of atropine, hypodermically, and in a few minutes heard the patient call out in agony that she was going to die, and for a period of over three hours I anxiously thought the same. All individuals have their resemblances and differences, and now it seems that the province of chemistry and physiological chemistry to be to recognize them and differentiate them. We have come to know that there is a chemical distinction and a chemical characteristic in the animal organism, and that these have a marked bearing upon the application of diet in health and diet in disease, as well as upon other methods of the healing art. Characteristics and peculiarities were formerly explained and are sometimes yet explained, on the ground of idiosyncrasy, that

*Read before the Odontographic Society of Chicago.

is, peculiar to the individual, and we said, and do say yet, what is one man's food is another's poison. In adapting a diet in health and a diet in derangement of function, we are compelled to rely upon experience, the chemistry and physiology of digestion, and a knowledge of the chemistry of foods. It no longer suffices for a physician to say to the patient to be careful of his diet. A lady brought her little boy, age thirteen years, to me recently, who was apparently suffering from some form of dyspepsia. She began by telling me that she had been very careful of the lad's food, but upon investigation it was clear, and is now to the mother, that she had been starving him. Abstention from food, although eminently proper under some circumstances, does not constitute a regulation of the diet, when it results in the starvation of the patient. In health the individual should obtain his necessary daily 125 grammes of proteid, 500 of carbohydrate, and 50 of fat. These represent about 3,000 calories, or heat units. Now a calorie, or heat unit, is the amount of heat required to raise one litre of water 1° C., or which is the same, one pound of water 4° F. These 3,000 units of heat can be obtained from one pound of bread, one-half pound of meat, one-fourth pound of fat, plus one pound of potatoes, one-half pint of milk, one-fourth pound of eggs, one-eighth pound of cheese.

If we divide these foods up into meals we can have for breakfast: Two slices of bread and butter, two eggs. Dinner: One plateful of potato soup, a large helping of meat with some fat, four medium sized potatoes, one slice of bread and butter. Supper: Three or four slices of bread and butter, one glass of milk, two ounces of cheese.

This arrangement can be varied, as, for instance, one-half the meat and potatoes as well as half the cheese may be taken at the noon meal and the other halves at the evening meal. Fruit can be partaken of as dessert. Such a diet can suit the ordinary individual in health doing average work. A few years ago, while in a café at noon time I saw a young woman, evidently a clerk or stenographer, come

in and sit down at a table near by. She ordered for her lunch a piece of pie and a cup of coffee. These constituted her entire meal. Her breakfast, in all likelihood, consisted of a piece of toast and a cup of coffee or tea, with perhaps an orange. The evening meal might have been more, with some meat. But from my observation, extending over a period of a number of years of this class, a diet of this character is a common thing. The number of calories, or heat units, perhaps a thousand, are barely enough to keep soul and body together. This is what can truly be termed a starvation diet. And we are not surprised to learn that these unfortunate individuals sooner or later develop tuberculosis, or some other disease, which soon terminates their starved-out existence. I had the opportunity a few years ago of seeing a man of seventy-three years eat for his morning meal four to six eggs, a large piece of ham, large quantities of bread and butter, potatoes, coffee, etc. For his lunch, or noon meal, a large piece of roast meat, large quantities of bread and butter, potatoes, coffee and dessert. For his dinner at night a large plateful of soup, large quantities of meat of one or two varieties, and accessories proportionately large. This is what you would call the diet of a glutton, and the calories or heat units approximately would average 8,000 to 9,000 every day. This method of feeding this man has kept up all his life and maintained a fair degree of health, as well as having succeeded moderately in his business undertakings. It is difficult to say, but we might conjecture what this man might have accomplished had he subsisted upon a diet of moderation.

Much has been said and written upon the subject of vegetarianism, or a diet exclusively of vegetables. Herbert Spencer, I think it was, who, having lived for six months upon this diet, threw everything he had written during this period into the fire. It is argued that the chemical constituents of vegetable food are equal in nutritive value to the corresponding constituents of animal food, and that, therefore, vegetable food as a whole can replace meat. The question in truth is one of nitrogen, and that alone. The carbohydrates are prac-

tically entirely derived from the vegetable kingdom; proteid and fat are also obtained from vegetables.

100 parts of dried lean beef contain	89 parts of proteid
100 parts of fat beef contain	51 parts of proteid
100 parts of pea flour contain	27 parts of proteid
100 parts of wheat flour contain	10 parts of proteid
100 parts of rice flour contain	7 parts of proteid

When we consider how incomplete the absorption of vegetable food is and also the enormous quantities of vegetable food that must be consumed to yield the necessary nitrogen, we see how futile and even hazardous it is to live exclusively upon an entirely vegetable diet. A dentist in my neighborhood attempted this diet. He was a man who bore a reputation for skill in his profession. He is reported to have made many a meal upon watermelon. The average composition of watermelon is, water, 92.9; proteid, 0.3, and carbohydrate, 6.5. From this analysis it is readily seen how low in nutritive value the watermelon is and the enormous quantities that must be eaten in order that the organism receive the proper amount of nitrogen. The same can be said of other vegetable foods. He failed to understand that the strongest forces to fight disease is good nutrition, and good nutrition is maintained only through good food. He died last winter from tuberculosis. The raw food mania prevails somewhat in the country, and we find people who are said to eat raw wheat, rice, oats, potatoes, meat, etc. Some freak like Dowie or Mrs. Eddy had a dream that raw food is the thing and nature's only way, tried it upon himself and thought he found it good, and induced others to do the same. Those of you who have ever seen a flock of sheep know that if you place a pole lengthwise in front of the bell wether, or leader, he will jump over it if driven. The sheep immediately following will do the same. Withdraw the pole and every last sheep of the flock will jump over an imaginary pole at a point just where the pole was placed originally for the leader.

In the adaptation of food in disease, the science of chemistry and

physiological chemistry has come to our aid. The individual peculiarities of the patient, his power to digest food, and kinds of food, and his physiology of digestion are carefully studied. The stomach contents and the fecal discharges, and likewise the urine, are scrutinized chemically and microscopically. After a thorough history of the case and a careful physical examination, resort is had to a special test. This is that of Ewald, which consists of 35 to 70 grammes of plain bread, and 300 to 400 cc. of water or weak tea. The contents of the stomach are withdrawn one hour later, filtered and titrated with a decinormal solution of sodium hydrate. We are enabled to determine whether we have an excess or lack of hydrochloric acid. Also, the presence of organic acids, and are thus enabled to determine what bearing their presence has upon the diagnosis and prognosis of the case, and, finally, what relation they may sustain in the adaptation of a diet, that the patient may be sustained and restored to health, and at the same time maintain a state of comfort and well being in the organs of digestion. It is evident, then, that there is no Procrustean bedstead in the application of diet as a therapeutic measure. It is also evident, for example, a diet in which there is an excess of HCl should differ markedly from that of one in which there is deficiency or total absence. Our therapeutic measures would likewise differ markedly in both cases. The regulation of the diet is strikingly seen in cases of hyperacidity of the stomach (hyperchlorhydria) where albuminous food is administered, that it may combine with the excess of hydrochloric acid in the stomach just at a time, if it should remain there free, would set up an irritation of the nerves of the gastric mucosa and reflexly cause a symptom complex of nerve exhaustion, or neurasthenia.

A lady of sixty years, with an acidity of 80°, thought she should lose her mind. She had been treated much by many physicians. A diet suited to the condition resulted in a rapid disappearance of all the uncomfortable symptoms. Fully as striking results are seen oftentimes in the correction of the opposite condition.

In the preparation of foods there is only one place, and that is in the kitchen and in the home. There is not a prepared food on the market that can not be duplicated in palatability and nutritive value and at a far less cost in the home. Much spoiled grain, it is

said, enters into the composition of many of the cereal foods, and the temptation to perpetrate fraud is just as great here as in any other field of human activity.

Recent investigations have disclosed an appalling condition and one that menaces the health of the nation, and that is the extensive adulteration of food products. There seems scarcely a product that has escaped. A cause of the much talked of race suicide can be found here. It is estimated, and perhaps within the limits of truth, that 500,000 infants die in this country every year through consumption of adulterated or unfit foods. The subject is one that comes home to us all, but requires a more extended treatment than can be included within the limits of this paper.

DENTISTRY IN ITALY.

BY HORACE WYNDHAM.

Judging from the number of its practitioners dentistry in Italy must be an exceedingly profitable calling. Indeed, so large is the total of those engaged therein that at first sight the wondering traveler comes to the conclusion that they must occasionally be reduced to pulling out one another's teeth to gain a livelihood! The fact is, however, a considerable proportion of those who dignify themselves with this title are dentists in little more than name. In sunny Italy it seems to be open for anyone who possesses a pair of forceps and a well developed set of muscles to dub himself a "chirurgo-dentista" and exhibit a sign to this effect over his doorway. Some of those who do so—especially in the country districts—are scarcely qualified to wrap a bottle of tooth wash. This, however, does not in the least stand in their way when a patient requires treatment and they will boldly declare their ability to perform the most delicate operations. If the sufferer recovers it is entirely a tribute to their own skill; if, on the other hand, he dies—well, it must be attributed to his own foolishness, or the "evil eye," or some similar convenient cause.

Of course in the big cities—such as Rome, Venice, Naples, Milan, etc.—there is an abundance of first-class and properly qualified den-

tists. All these practitioners have studied at recognized institutions and many of them can boast of degrees in no way inferior to the ones conferred by the leading colleges of New York and London. In Rome the members of the profession have banded themselves together into an influential corporate body. Although only founded a comparatively short time ago it exercises great weight in all matters affecting the practice of dentistry throughout Italy. No less than 123 separate societies in different parts of the country are affiliated to it. The president is the Cavaliere Bargnoni.



St. Mark's Square, Venice, Where Some of the Leading Dentists Are to be Found.

In addition to the Italian dentists in Rome a number of foreign ones will be found in the city. The large American and British colony living there permanently has created a demand for the services of several practitioners of these nationalities, while there are also a good many French and German ones. A proportion of the chemists, too, have at any rate a smattering of dental science and in several cases a surgery is attached to their shops. As a rule the leading members of the profession—that is, those who include among

their clients the staffs of the different embassies, the nobility, and principal residents—have their business premises in the Corso Umberto or the immediate vicinity. This is the chief street in Rome and leads from the Piazza del Popolo to the Via Nazionale. Others, however, treat cases at their private addresses.

Naples, which, though the second city in Italy, has a larger population than Rome, is equally well supplied with dentists. The proportion of foreigners among them, however, is rather small. This is probably due to the fact that the resident English speaking community is trifling compared with that of the capital. The localities chiefly affected by practitioners are the Via Roma, the Corso Vittorio Emanuele, and the Strada San Carlo. In nearly every case the business premises are situated in the upper story of a block of shops, and in evidence of the manner in which they are occupied it is usual to hang a large gilt scroll beneath the windows. Very often a case containing an assortment of artificial teeth will also be found on either side of the doorway. The average Italian dentist, it may be pointed out, is by no means bashful and likes to take every opportunity of bringing his name before the rest of the world.

Sufferers from toothache in Venice can not, as they could elsewhere, take a cab to the nearest dentist. This is for the sufficiently good reason that there are no cabs anywhere in that famous town. In the same way, neither motors nor any other form of wheeled conveyance exist. What the afflicted individual has to do, accordingly, is to summon up all the patience he can and hire a gondola to convey him to the nearest practitioner. By the time he has finished haggling over the amount to be paid for crossing the Grand Canal he will probably have forgotten which tooth it is which has been troubling him. Most of the Venetian dentists occupy a set of rooms in one of the numerous "palaces" (as every large house bordering the Grand Canal is known) situated between the railway station and the public gardens. Others, however—and these are more accessible as they can be visited on foot—are to be found in St. Mark's Square or the neighborhood of the Piazzetta. The view from the windows of their consulting rooms—embracing the whole panorama of the Canal, with its fringe of stately buildings, and unending succession of picturesque gondolas—is superb. Unfortunately, however, it does not cure an aching tooth. The establishments of those who are patronized

by the lower classes are for the most part to be found in the Merceria or the Salizzada San Moise. These are two narrow and densely crowded thoroughfares, each of which opens on to St. Mark's Square. The spot thus named is the business center and heart of modern Venice and throbs with life and movement from morning to night. Its appearance is singularly beautiful, the whole area being paved with slabs of trachyte and marble. On the eastern side is the world



A Dentist's Premises in the Via Nazionale, Rome.

renowned church of St. Mark, with the equally celebrated Doge's Palace adjoining. Round the other three sides are magnificent buildings, the ground floors of which are occupied by arcades containing cafés and shops.

The scale of fees charged by dentists in Italy are much the same all over the country, but are naturally rather higher in the big towns than in the small ones. The custom of having different rates for

natives and foreigners, however, obtains and the sufferer who is unable to speak the language is apt to be charged on this account a good deal more than would be the case if he knew a little Italian. The common impression that the "forestieri" (as strangers are known) are made of money dies hard. It is as well, accordingly, to ascertain beforehand exactly what has to be paid, when the sufferer can decide for himself if relief is being purchased too dearly or not. Average charges, however, are as follows:

Simple extractions, from 3 lire per tooth; extractions with anesthetic from 10 lire per tooth; stopping, from 12 lire per tooth; bridge work, from 20 lire per tooth; a lire equalling about twenty cents of American money.

If the practitioner has to go to the patient's house the fee is, of course, increased. In these cases it varies in accordance with the distance and also with the style of the patient's surroundings. Thus, residence at a first-class hotel means a heavier dentist's bill than would be the case when the visit is paid to a more modest establishment. When the treatment involves a number of visits a reduction can be claimed on the total charge. This is only as it should be, for some Italian dentists are almost as difficult to get rid of as are plumbers, and when once they have found their way into a house it is an extremely difficult matter to convince them that their presence is no longer required. They come over and over again, if only to talk about the weather. Some of them, too, when sent for to perform an extraction have an irritating habit of arriving without their forceps, and when they reappear with these charge for two attendances as a matter of course. With some practitioners, too, it is a matter of considerable difficulty to get a proper account at all. When one is asked for the only reply obtainable is a shrug of the shoulders and an assurance that "what you please" will be satisfactory. As a matter of fact, it is nothing of the sort. To a more urgent demand comes the response, with another gesture, that "what the honorable British signor considers just will be regarded as sufficient." Thereupon the only thing to do is either to consult an experienced friend, or to pay the equivalent of what would have to be paid at home.

For dental treatment anything out of the ordinary one can scarcely do better than go to a hospital. Every big town in Italy has a hospital with a properly organized branch for the practice of dentis-

try attached to it. Here the patient, whatever his nationality, may rest assured of being skillfully attended to. The charges are rather high, but the money is certainly well spent.

In their fittings and appointments the dental surgeries of Italy are, class for class, much the same as in other European countries. Compared with the luxurious surroundings of the first grade establishments in England and America, however, they leave a good deal to be desired. The operating chair, for example, is apt to be hard



The Strada San Carlo, Naples, Where Many Dentists Have Their Offices.

and uncomfortable, while the instruments are seldom remarkable for their spotless condition. The rooms, too, are generally stuffy and ill-lighted. Nor is the practitioner himself always noted for the extreme cleanliness of his person. His breath, for example, probably smells of garlic, while his hands often look as though they would be all the better for a more intimate acquaintance with soap and water.

If the establishments of the first class dentists in Italy leave

a good deal to be desired those of the second and third class call even more urgently for reform. A professional visit to them is an exceedingly trying experience. The surgery probably consists of a screened off portion of the practitioner's sitting room, while the operating chair is as likely as not an ordinary leather seated one. Occasionally, too, the appearance of the different instruments bears visible traces of recent use, while one is pretty sure to be offered a dirty towel and a basin the size of a jam pot when the operation is over. An ample supply of fresh towels and water seems to be regarded as an unheard of extravagance. In the small villages the arrangements are even more primitive. As likely as not, the local dentist is also the local veterinary surgeon, chemist, and grocer combined. The fitting up of a consulting room presents no difficulties at all, if only for the reason that the provision of such a feature is considered quite unnecessary. A three legged stool to sit on takes up less space than an elaborate operating chair, while it also possesses the advantage that it can be set down on the pavement. Dental treatment, indeed, is generally administered in *coram publico*, as the practitioner can thus secure a valuable advertisement.

Even in the big towns a good deal of open air dentistry is carried on, at any rate among the inhabitants of the poorer quarters. One of the recognized sights of outdoor life in Naples, for example, is to watch the "dentists" at work in the district known as the Porta Capuana. Here every afternoon and evening are to be seen quack doctors mounted on benches and selling nostrums, guaranteed to cure any complaint under the sun. At intervals they break off in their harangues to pull a sufferer's tooth.

The process is decidedly entertaining to observe, though doubtless exceedingly painful to undergo. There is a gap in the crowd of onlookers and a sufferer with a swollen jaw comes sheepishly forward. To inspire him with the necessary degree of fortitude to face the impending ordeal his *inamorata* probably grasps one hand, while the other is held by a boon companion. For a moment the patient hangs back, the business like manner in which the operator rolls up a sleeve and brandishes a pair of forceps making him repent his decision. The spectators, however, have no fancy to be balked of a free entertainment and promptly adjure the victim to proceed with his intention. "Courage, Guiseppe," whispers the lady accom-

panying him. A sickly smile is the only answer and Guiseppe still hangs back. The dentist waxes sarcastic and the crowd endeavors to increase the patient's fortitude by cheering assurances that the pain is nothing. To this Guiseppe probably replies that it is his jaw and not theirs that is to feel the forceps. At length, however, with a cheer he resigns himself to the inevitable, and seats himself on the dreaded bench. As soon as he has done so he takes an affectionate farewell of those nearest and dearest and opens his mouth to its fullest capacity. The dentist inserts a cork to prevent it closing again before the proper time. Then, taking up his instruments, he addresses the spectators on the exhibition of skill they are about to witness. Suddenly, and before he quite realizes what is



A Dental Office on the Grand Canal, Venice.

happening the unhappy patient feels a violent wrench and the tooth is waved exultantly aloft. Thereupon Guiseppe becomes the hero of the hour and is escorted in triumph by a band of admirers to the nearest wine shop. Sometimes, in the pardonable excitement of the moment, the wrong tooth is withdrawn at the first attempt. As, when this untoward occurrence takes place a second tooth is ex-

tracted free of charge, it is generally felt by everyone—except perhaps the sufferer—that no real cause for complaint exists.

The working hours of Italian dentists vary in accordance with the locality in which they practice and the season of the year. In the big towns, for example, treatment is administered from 9:30 a. m. to 6 p. m. daily during the summer months, and from 8 a. m. to 5 p. m. during the winter ones. In country places, however, the day's work usually begins earlier and finishes later. Saints' days and Sundays are regarded as holidays and if dental aid be sought at such time increased fees have to be paid.

As in other places abroad dentists in Italy make special efforts to obtain the patronage of American and British residents and visitors. To this end they are in the habit of sending out broadcast what they fondly imagine to be alluringly compiled statements of their professional skill. The "English" in which these pamphlets are drawn up, however, does not always impress the recipient very favorably. This, for example, is the sort of thing encountered:

"Dr. Luigi Michaele begs to inform ladies and gentlemen and others of smart set in Rome and elsewhere that he is high class surgeon-dentist. Elegant extractions performed daily with extreme cleverness; also bridge work and other things. Arrangements for stoppages and fees strictly complete."

Sometimes the circulars sent out promiscuously to hotel residents contain, as additional bait, testimonials from grateful patients. As these are of course written in Italian, "English" versions are appended. The process of translating them, however, seems to detract somewhat from their value, while it is also apt to inspire the reader with grave doubts as to their authenticity. Here, for example, are a couple of specimen "testimonials":

WONDERFUL CASE!

Estimable Signor:

When suffering recently from horrible pains in various parts of vile body (notably upper and lower jaw of mouth) I placed myself in your hands. Result, aching tooth instantly ceased being and perfect tranquility ensued. This is altogether genuine.

SIGNORA CAMUNCITA MORGANO.

Honorable and Much Esteemed Signor Bellini:

I beg to say that my mother-in-law, who was lately treated by

you for grave pains in big double tooth has now succumbed from other maladies. With many thanks for your assistance in the matter, I am

Cav. LEOPOLDO PINICETTA.

Most of the first class dentists in Rome and Naples, as also those



A Dental Office in Naples.

in Florence, Venice and Milan, etc., can speak English more or less fluently. As a rule, however, they are more at home in French or German. Still, without having a command of Italian it is not difficult for a foreign patient to explain which of his teeth is troubling him.

PROCEEDINGS OF SOCIETIES.

THE ODONTOLOGICAL SOCIETY OF CHICAGO.

Regular meeting held January 10, 1905; the president, Dr. Woolley, in the chair.

DISCUSSION OF DR. HINKINS' PAPER.

DR. GEORGE W. COOK:

This paper is a very interesting one. From the theoretical standpoint this problem is an easy one to solve, but not so practically. I, like every other practitioner, have met just such cases as the doctor has cited, and the question has confronted me, What to do with them? I have a case under my care at the present time that has troubled me greatly. The pulps are exposed in the two lower first permanent molars in a child nine years old. I am anxious to do the best I can for the child, but as matters stand now, the best thing to do is to extract those teeth, yet I dislike to do that. I know that the apical foramina in those teeth are very large, as is so often the case, and if I devitalize the teeth and fill the root canals it is difficult to tell how far the infection will extend. Still, the pulps in those teeth are apparently in good condition. Now, what is the best thing to do under the circumstances? In the majority of cases, from the practical standpoint, there is only one thing to do, and that is to do what Dr. Hinkins did, regardless of what we may think from the theoretical standpoint.

I know that some men hold that it is almost criminal to sacrifice these teeth under any circumstances, and tonight, I believe, the Odontological Society of Milwaukee is having a meeting at which Dr. M. T. Watson, of Detroit, is discussing this very question. He believes that the sacrifice of the first permanent molar is never justifiable. I attended a meeting of the Michigan State Dental Society some time ago, at which he showed a number of models and casts which seemed to prove the correctness of his position.

This question needs to be discussed by men of the highest prac-

tical ability, and all phases of the subject must be considered before it will be possible to lay down any rules by which we can be guided in all cases.

DR. J. G. REID:

No question comes up in my practice that is more interesting than the one under discussion, and there is no problem in the practice of dentistry that has given me more trouble. I have read more on this subject than on any other subject connected with the practice of dentistry, and I do not yet know what is best to be done under all circumstances. There is no rule or set of rules or system that will guide us in all cases. The conditions are so varied that it is impossible to outline any system of practice that is definite. Therefore, each individual must settle the question for himself at the time the case presents itself. I have tried to save these teeth, and many times I have been defeated. I have extracted the first permanent molar, and have sometimes been defeated; not so much on my own judgment as on having the parent fail to follow instructions. They forget, and that, sometimes, leads to trouble. But that is not your fault.

I have made up my mind quite definitely that in cases such as those mentioned I would extract the teeth without question. I believe I do that more than I attempt to save the teeth, and my results are better.

The problem of trying to preserve those teeth is a hard one. It is difficult to remove the pulps, and it is difficult to fill the canals. I do not believe that we can fill these roots with certainty much before the age of thirteen or fourteen, and that is too late to extract them. Teeth that you expect to extract should, without question, be removed before the age of twelve. I have often seen the second molars come in at the age of twelve, and then it becomes questionable whether we ought to remove the first molars, even though they are very much disintegrated.

In this matter I have to rely exclusively on my own judgment, and each case must be treated in accordance with conditions as they

appear at the time the case presents itself. My inclination is, however, to remove these teeth. I believe that is good practice, and I follow it.

DR. E. J. PERRY:

There are eight teeth in the mouth of which I am very jealous, the first permanent molars and the cuspid teeth. If I can keep these intact, I feel that I can easily supply all the rest. But when these teeth are missing I feel that the end of the masticating surface is near.

I hold that the loss of the molar surface is grave in the extreme. When the pulps of the first molars are exposed, and the child is on the other side of twelve, the question comes up in my mind, Must I extract all four and treat them as temporary teeth? I frequently extract one, but I have never yet consented to the extraction of the other three. I will grant that I may have had a better molar surface by doing it, but there is a formation of bone around these first molars that is the anchor of the molar surface, and I regard them with awe.

This is an important subject, and, as Dr. Reid said, you may read about it until the end of time without getting any light on the subject. If the first molar is extracted you will find the end of the root undeveloped, and that tooth will be lost anyhow before the patient is twenty. I guess it is a truism that if the first molar must be lost (and that is a matter for each individual to decide for himself), it ought to be lost before the second molar comes in. If it be extracted after the second molar is in, then the value of the second molar is largely destroyed. If it leans, as it surely will, the occlusion will be imperfect and pyorrhea will likely set in upon its anterior root, and then the molar surface must be supplied by artificial means, and no mortal ever supplied an artificial molar surface that is at all comparable to the original molar surface of the first and second molars.

It seems to me that if I had stood in the essayist's shoes, I would have thought as he did, and I would have done as he did.

DR. E. R. CARPENTER:

There is no subject that has been the means of so much digression on my part from principles instilled into me in college as this. Prof. E. T. Darby was constantly calling the attention of his students to the fact that the first permanent molar was the keystone of the arch. Until within the last four or five years I have attempted to save every first permanent molar. About three years ago I had a long talk with Dr. Hinkins on the subject, and he showed me a number of models and teeth which he had extracted, and I began to waver, and I am still wavering as to what is the best, the most conscientious and profitable way of handling the first permanent molar under these conditions.

An examination of the models passed around tonight shows that in every case where the first molar was extracted the bite has become much closer. I have never heard that point mentioned.

I have worked and worked, trying to remove the pulps from these teeth so as to preserve the masticating surface and the arch, and in the past year I have come to this conclusion, that if it is before the eruption of the second molar, and there is the slightest tendency toward overcrowding of the teeth, these molars should be extracted. I think that I have come nearer being a convert tonight for the extraction of the first molar than I have ever been. The results Dr. Hinkins has shown us make me feel that the paper is along the right lines, and I am very grateful to him for bringing up this subject.

DR. C. S. CASE:

This subject is an extremely important one, and it involves such a variety of conditions that it is impossible for anyone having much experience to take up its various phases in a limited discussion. Some months ago Dr. Hinkins and I had a conversation in regard to this subject. I told him then, as I do tonight, that the most vital feature of the whole question is the relations of the teeth with reference to protrusion and occlusion, and I am surprised that no one has mentioned that here tonight. If the upper or the lower teeth are protruded, then there would be an excuse for removing the first permanent molars from the protruded jaw, and only then when they are so diseased by decay or otherwise that they can not be permanently saved; because the effect upon occlusion in the removal of

the first permanent molar is so great that it is far better to remove a bicuspid on each side in case of protrusion than the first molars.

After the removal of a first molar, the teeth back of it come forward rarely more than half the width of the molar, even though the molar is removed at the age of twelve, the balance of the space is filled is from the teeth in front moving back. I would like to know if Dr. Hinkins means to say that where there is one molar in either jaw that is past saving, that he would remove both molars in that jaw; and also the molars on the other jaw or the bicuspid?

DR. HINKINS:

That would depend entirely on the physical and mental condition of the patient, and the condition of the teeth and the arches. I do not recommend the wholesale extraction of the first permanent molars, but if the pulp is exposed in the right lower first molar and the left upper first molar, then I would extract, if the arches are bad, all four teeth. If I had only one molar, and the other three are good, and I felt that the tooth structure is sound and the bicuspid is as good or bad as the molar, I should take a bicuspid in preference to the molar, if the molar is the better tooth.

DR. CASE:

The first thing the dentist should do when confronted with this question is to find out whether it is impossible to save these teeth. If a first molar can not be saved by filling, the next question is, What is the occlusion? Is it normal? Do the first upper bicuspid strike between the first and second bicuspid below, and does the bucco-mesial cusp of the upper molar strike between the two lower buccal cusps of the first molar, or are the teeth of that jaw in mesial or distal malocclusion? The third question to consider is, What will the ultimate effect of the probable movement of the teeth be after extraction of this tooth on the features of the child?

There are many cases of normal occlusion in which there is a bimaxillary protrusion of the teeth, or a retrusion; you certainly would not extract four teeth from a mouth in which they are already retruded in their dento-facial relations and produce a further deformity.

In regard to malocclusion: Are those affected teeth in a jaw that is in mesial or distal malocclusion the width of a second bicuspid? In such a case you must decide whether it is an upper or

lower protrusion or retrusion. Would you extract a lower molar from a case of lower retrusion? It is not a question whether the tooth is so badly decayed that you can not save it, but would you extract a tooth from a jaw in which the teeth, upper or lower, are already retruded the width of a bicuspid, and thus increase an existing facial deformity?

That is an important question that every dentist must consider; the importance of occlusion; of interdigitation of the cusps and of the dento-facial relations. You are discussing the question from a very limited standpoint when you confine your thoughts entirely to the teeth. Dentists, as a rule, do not stop to consider these other points to which I have referred.

In regard to the time that these teeth should be extracted: At nine years the roots of the second molars are not calcified; at twelve they are nearly calcified, all but their apical ends. If the first permanent molars are extracted at nine, there will be a greater liability of the second molar drifting forward in an upright position than would exist later when the roots are fully formed; and in proportion to the formation of the roots the teeth themselves will be inclined. So that if extracted early, when the roots are not formed, the teeth will be more liable to assume an upright position and the occlusion will be better.

Dr. Carpenter spoke of producing a close bite occlusion in the early extraction of the first permanent molar. Have any of you ever noticed impacted lower second deciduous molars between the first bicuspid and first permanent molars? I have had a number of such cases, the deciduous molar laying close to the gum and the contact points of the adjoining teeth hanging over them and impacting the second bicuspid. The distance between the occlusal surface of this deciduous molar and permanent teeth marks the amount of growth that has normally opened the bite since the loss of the last of the deciduous set. When the first permanent molars are extracted before the full eruption of the second molars, the jaws are deprived of their main sustaining power, with the result of an abnormally close bite occlusion. After the deciduous teeth are lost, under normal conditions, the permanent teeth continue to rise as all parts of the body grow and enlarge.

If the first permanent molars are extracted at the time that their occlusal surfaces are even with the deciduous, the jaws are kept closer together because the second molars are stopped in their growth by the occlusion of the other teeth, and the final result is that you get a very much closer occlusion of the teeth than you would otherwise.

Crowding of teeth in the arch is not an index for extraction, because the arches can always be enlarged sufficiently to make room for them.

(Dr. Case exhibited models illustrating the movement of teeth after extraction of some, and the effect of extraction in producing irregularities of the teeth.)

DR. W. V-B. AMES:

It seems that I or some one else must have gotten my few families very well in hand, for I find it difficult to recall a case of a child, the child having been under my care, in which I could not save the pulp of a first permanent molar. I agree that in case these teeth are in such condition that it is out of the question to treat them conservatively, that in all probability the best course to pursue is to nurse them along until about the twelfth year, or the promise of the eruption of the second molars, when extraction does least harm. But in such a case I would refrain from extracting any other first molar than the one so diseased that it could not be saved. If the lower must be extracted, I would count on extracting the upper third molar when it appears rather than extract the upper first molar, which is sound and is a very much better tooth than the second or the third.

While Dr. Hinkins has all the results that could have been gotten under the circumstances, in a number of cases it is quite palpable that the second molars which have come into the place of the first are not the teeth which should have occupied the space, either in form or molar surface.

As for the correction and easing of a crowded condition of the arch, it has not been my experience that that is satisfactorily accomplished by the gaining of space in that particular region. There is not enough back of the first permanent molar for anchorage to satisfactorily move the teeth in the anterior region.

I was rather surprised to hear Dr. Case say that the anterior teeth will move backward half the width of a bicuspid. It always

seemed to me that the posterior teeth would move forward more than the anterior teeth will move back. I have seen so little occasion for the sacrifice of the first permanent molar that I am not qualified to discuss results.

DR. J. H. WOOLLEY:

As regards the first permanent molar, considering the circumstances under which they have been erupted, there are many who believe them to be short lived, but they also believe they should be preserved until the time when the second permanent molar first makes its appearance. During the formative and eruptive periods of the permanent teeth they are under the influence of an independent and peculiar vital (nervous) force; this innervation pushes on their development, regardless of the more tardy growth of the osseous system, being implanted in a crowded position in undeveloped maxilla, they never have an opportunity to recover from it and emerge in the same disordered arrangement in which the crowns were formed. In these positions, when fully erupted and surrounded by their alveolar wall, they become fixed, regardless of any subsequent growth of the jaw; for it is one of nature's laws that when the climax of development has been reached and the type is complete, function ceases."—Kingsley.

I am one who supports the belief of Tomes that the teeth, when erupted, do not come down and take the place in the bone ready prepared for them, but, on the contrary, that which is there to start with is absorbed and the bone in which they are ultimately implanted is built up around them, no matter what position they assume subsequent to their eruption. My experience and belief is that the size of the dental arch is not absolutely fixed by the size of the jaw, for I have found by actual measurement in many models a confirmation of this opinion. We do not know what the future type of the youthful face may be when matured and I believe that extraction of the first permanent molars is liable to prevent the true development of individual expression. In their retention or loss we have to consider what relation they bear to facial expression, also the effect the shape of the arch has upon the human voice. If the arch is narrow, cramped and pinched, the voice takes on a nasal tone; if widened, it becomes rounder and fuller. In the retention of the first permanent molar, its office during the shedding of the temporary teeth is to hold the jaw in

proper position, preventing any twisting of the jaws by the strong muscles of the face, such as the masseter and temporal. As our essayist says, when the teeth of our little sufferers are causing trouble, he has not one rule to treat all cases, but according to the merit each case demands. The time for the management of the first permanent molars, to my belief, is when they are first erupted, and to the belief of most of us they are attacked with decay in the first two or three years. Dr. Black says if both the teeth are in a fair condition at the age of fifteen, the chances for the first are better than those of the second.

This is largely a question of the future. We must educate the parents with regard to the care of the teeth of their children. If the first molars are looked after carefully from the commencement of their eruption you will find, in many cases, slightly decalcified spots in the sulci that would not be observed otherwise; if these are watched, I believe these teeth can be saved.

As regards Dr. Hinkins' models, they represent the teeth some time after operation. If we could have the models of these mouths before operation we would be better able to judge of the results he has obtained. In the majority of the models the teeth come together closer than they would naturally, which, I think, is the result of the loss of the molars.

DR. HINKINS (closing the discussion):

I have enjoyed the discussion very much. Being located as I am, I come in contact with many more children than the average practitioner and I am more often called on to answer this question that I have propounded to you. I think the health of the child is of more importance than the dento-facial relation, and should receive first consideration. Up to five years ago it was rare, indeed, to hear the family physician say anything about the teeth, but since then I am consulted almost every week by physicians about their little patients' teeth.

When such a case presents itself to me, I make a very careful study of the case, considering protrusion, retrusion, dento-facial relations, the family history as well as the personal history of the patient, making as thorough a diagnosis as possible, and then I lay down my treatment. If we could handle the parents of our cases as we should like to, the condition of things would be different, but under the circumstances we must do the best we can. In many of

these cases I doubt that their facial condition would have been as good if the patient had been treated according to principles of orthodontia than it is now; although, if there is need for regulation, and the parents consent to it, I always refer the case to a specialist.

The first thing demanded of you is to give relief. That can be given in several ways. I always feel under a moral as well as a professional obligation to do the best I can for the general health and welfare of the patient, and I have done what seemed to me to be the best practice in these cases.

One thing I can not understand is, why the first molar is called the keystone of the arch. I have searched the literature, but failed to find any explanation of this term. An old friend of mine called the cuspid teeth the keystone of the arch, and I believe he was as nearly right as the modern orthodontist is in calling the molar the keystone. Old Dr. Allport was an advocate of extracting the first molar, and the fact that his patients had good occlusion and still escaped the physical and mental strain of regulation led me to adopt his practice.

I could have selected models which showed better results than those I passed around this evening, but I preferred to show you both the good and the bad. In all of these cases the decay has subsided and the results are good; I was instrumental in preserving the child's health—the very best result.

ILLINOIS STATE DENTAL SOCIETY, MOLINE, ILL., MAY
9, 10, 11, 1905.

DISCUSSION OF THE PRESIDENT'S ADDRESS.

DR. C. P. PRUYN, of Chicago:

Mr. President: It is a great pleasure to be called upon to open the discussion on this address by the president of the greatest dental society in the world. I joined this society twenty-nine years ago at a meeting held in the city of Galesburg, and I take great pleasure in wearing one of the badges I have upon my coat, signifying that I am a life member. Some of the new members may not know that

after the payment of twenty-five years' dues a man becomes a life member thereafter without payment of dues. As I look back over those twenty-nine years and think of the grand times we have had together and how much I have been helped by this society, I wonder why the younger men have not flocked to the society in greater numbers in recent years.

We are taking on a new lease of life under the able leadership of Dr. Arthur D. Black, for it is largely through him we have succeeded in effecting this reorganization, the influence of which will be felt all over the wide world; and we are to be congratulated on being members of the Illinois State Dental Society, which has always been one of the best in the world. Its published proceedings, as many of you know, have been sought for everywhere. We have done a great work, which has been due chiefly to the great leaders we have had in the past. You remember some of them. Unfortunately, not all of them are with us, for many have passed to join the great silent majority, such as Dr. Cushing, Dr. Dean, and I could mention a dozen or more whose names you would remember, the men who worked so hard and made it possible for you and I to meet this morning under such delightful auspices. We do not realize today the unfavorable conditions under which they worked to accomplish those things which made it possible for us to do the grand work we are doing today in alleviating the ills of humanity.

The president has alluded to the work of the society and the great and favorable outlook, the result of this new organization. Largely as the result of the greatness of our new organization, we have had a new law passed, which doubtless would not have been passed if we had not been able to go to Springfield and represent to the legislators that we have a membership of 1,200, representing the best men of our State, who are anxious to have proper legislation to protect the people of Illinois against incompetent dentists. As the result, therefore, of organization great good will come to the State. Do not think that great good will come to us as individuals at once, but great good will come to the people, and we must do all we can to sustain this law. We have to do work now that we have never had to do before.

We are proud to have such a man as Dr. Johnson to preside over our deliberations. We honor him and love him. When men say that

they love a man it means something. When a man loves a woman it is a different thing; but when we say all of us love our presiding officer, it means a different thing entirely. (Applause.)

The work we have before us is so much that I can not talk as long as I would like to do. I simply wish to express thanks to the president for his admirable address. (Applause.)

DR. C. R. TAYLOR, of Streator:

We have listened to an elegant address, and our president has spoken of many things we are interested in.

May I say to each one of you that the great object in life is not simply to make dollars, or to occupy a position, and when we are through with life the thing we will care more about than dollars and position will be the fact that we have been worthy of both? To be worthy of a position is better than to occupy it. To be worthy of happiness is better than happiness itself. And so it is better than anything else we can get in life to so qualify ourselves that we will not be only dentists, but will be men in the communities in which we live, so that possibly through us will live the institutions to which we belong and the profession we love. We should broaden ourselves and feel that we have a duty to perform in life, and if we do not do this, when life's end comes it will take a magnifying glass to find out where we are. If we take a broad view of life, and consider that it is one of service, of duty, of work for humanity, then we will accomplish something that is worth while. When we seek legislation for our profession first and the people afterward, we are not worthy of having good legislation; but if we go to the legislature or to any body of men and can honestly say we are doing this for the benefit of the people, then we can have whatever we ask for.

DR. G. V. BLACK, of Chicago:

I am very glad to say a word in the discussion of this eloquent address, which represents truly the interests of this association. I wish, however, to add a word or two in a somewhat different line.

We have in this association today many new members, men who have not been with us before; but we have also many members of this society who are not with us today, as must necessarily be the case in any association that has assumed such proportions as this. I wish to speak especially of them from the standpoint of the local societies. To my mind, gentlemen, the local organization is the greater and

better. (Applause.) It is from these local organizations that the greatest good to this association and to its membership must come. In them they may meet near their own homes and discuss the subjects nearest to them. It is there that we expect the greatest development; it is there the young men may expect the greatest encouragement, and there they will first learn to speak. Of course, we welcome them here to say their say, but in the local organizations we expect the greatest good. I hope the young men who come here will do so feeling proud of their local society work, and bring that work to us here for further distribution; not only the local organizations, as we know them in the State society, but the still smaller ones where four or five, or half a dozen, get together and discuss with one another the work they are doing. It will come eventually to the State society. That is the work I am most interested in. (Applause).

DR. A. C. HEWITT, of Chicago:

I think that our president has played a little sharp practice on us in that address. He has made a picture of Charles Nelson Johnson and hung it up for your inspection. He never thought he was picturing himself before your minds, but his address is an outgrowth of the man. He has schooled his mind to think about something besides plugger points and excavators. He has not been wasting time all these years; he has been grasping it as it passes; he never grumbles about the loss of time, but he works more hours than any of us. Let me tell you why I think so.

Among the other beautiful things he has written is a poem, entitled "My Hour," which I wish you all would read.

I will venture that many of the young men here have never read that poem. Now, gentlemen, read the dental journals. I am talking to the young men; I am gray-haired, and I have a right to talk to them. My age and my experience give me that right. Do not tell me that you can not find time to do this. Do not hunt for time; take it. Steal an hour where it is reputable, where it is warm and comfortable, where it is thought provoking.

Gentlemen, I may never speak to you again. I will if I can keep alive; I am going to live as long as I can, and do all the good I can. (Applause.) Read. I earnestly entreat you to read. It takes but a little while to learn the mechanics of dentistry, to learn how to plug a hole here and there, and how to build a bridge. But

to learn to be a dentist, a professional man, and to be a man that shall wield an influence in the community in which you live is an entirely different proposition. It takes months and years of hard labor to do that. How has Dr. Black achieved such honors as you gave him this morning when he advanced to the platform to speak? He has worked hard, through a long life, and I am very glad you welcomed him as you did this morning.

I say to the younger men, grow to be such men as Dr. Black and our president, and I will be satisfied to lie down tomorrow, or the next day, in the oblivion of sleep, and dream of you perhaps, and round out my hopes for you in the beyond which I am not afraid to meet. The Being who brought me into this life will take care of me on the other side. I hope to meet you all there. (Loud applause.)

DR. R. L. COCHRAN, of Burlington, Iowa:

I want to say that for seventeen years I have been a corresponding member of this society, and I have gotten more out of this address today than all of the preceding years of my attendance. Why? Because this good work of organization is not only going to spread throughout Illinois, but it is going to extend into Iowa, and we are bound to beat you. (Applause.)

Dr. Gallie stated, I think, that Chicago included the State of Iowa. But I want to tell you, gentlemen, that Iowa is going to take in Illinois. (Laughter.) We are going to do it. We have the power there; we have the men, and we are going to make a great State society, and Dr. Johnson is helping us to do it. The inspiration he has given us I am going to take back home with me.

DR. J. N. CROUSE, of Chicago:

It seems to me, after looking over this hall this morning, as if I am a stranger, although I am the father of the society, the only charter member here. I owe to this society, more than to any other one thing, or any other two or three things, whatever success I have had.

Coming from a course of lectures as a boy back to a country town, a call was issued for the organization of the Illinois State Dental Society. An older brother, practicing medicine, said, "You go and get into that." That was the best advice I ever received.

I shall not attempt to discuss the elegant address, but I want to touch on one or two points, and one in particular is that we have got our organization started; but don't imagine all the work is done.

I feel a good deal of anxiety to know just how we will handle it as a society organization with two thousand members in it, which I think we will have before we quit. The successful working of a big organization requires a great deal more care and attention than a small one.

As to the local organizations, every man should belong to one of them. He should work in it. He should try to get others, not members, interested in it. There is no man, if he behaves himself as a professional man, who can not benefit the society, and the society can be of great benefit to him. Men should get out and become acquainted. I think probably the most benefit I have received from my profession has been from social intercourse, visiting with two or three or more men associated together, and discussing matters professional and otherwise. These local organizations are next to that, and should be cultivated as a means of benefiting you in your profession. I have had considerable experience in hunting up little societies over the country at one time and another, and I think they do the greatest work after all. In them men can get together and do away with the prejudice of one against the other. Our local committee on organization has so thoroughly done its work that it will be of the greatest benefit to the profession outside of the State, because it is going to spread to the other States. Other States will be organized. That will be the inevitable result of the present reorganization of this society. I do not feel that I am organized out of it. (Laughter.) I am going to stay in it. I have attended every meeting for forty years except one. (Applause.) I feel I am in a position to look on; yet I may not always keep quiet. (Laughter.) Time may come when I want to say something. I thank you.

DR. THOMAS L. GILMORE, of Chicago:

We are of one accord as to the value of the president's address. When he says anything it is always good.

There is one point he has touched upon in which I am particularly interested. He intimated, if I understood him, that we should give the people a better appreciation of what dentistry is. There is no difference of opinion among the laity as to the standing of the medical profession. There is no difference of opinion regarding the status of the legal profession; but we must be painfully aware, at times, of the estimate that is put upon the dentist. It seems to me that we have a great field here in giving the laity a better under-

standing of what we really are, what we really do, and what we know. It is a very common occurrence, when something is said regarding the studies our young men are required to take, to hear people say, "Do dentists need to know such things as these?" They only supposed that dentists need to know mechanical things. We should impress upon our people that we do know something more than mere mechanics. (Applause.)

DR. C. E. BENTLEY, of Chicago:

I shall only speak of one phase of this excellent address, namely, the influence of contact. Contact with our fellow men has a greater civilizing influence than any other force that we may measure or comment upon. You know it was Ben Jonson and Charles Lamb who were walking down the street one day when Johnson bowed to a man, and Charles Lamb said, "I hate that man." "Well," Jonson replied, "you don't know him." Lamb replied, "Possibly that is the reason I hate him." The salutary, the civilizing, the humanizing influence of contact, this thing of knowing one another, socially rubbing against each other, making mental estimates of each other's good and bad points, the humanitarian instinct of minimizing the evil and maximizing the good, all is the result of contact. And where professional jealousies arise from a response of selfishness, to which all human beings are more or less related, these crude expressions can be minimized by the influence of contact. It warms the cockles of my heart when I look over this great gathering and think of the possibilities of contact at this meeting. I think that this question of contact has a great deal to do with the influence of men who are eminent in the profession. George H. Cushing could have written a thousand papers; but an hour's contact with Cushing was worth all of his papers. (Applause.) It was like an electric spark in vitiated atmosphere. The influence of his personality humanized everything with which it came in contact. I would say, then, let this social contact, this humanizing influence be one of the great features of this meeting; and aside from the inspiration you can get from the words of the president, and the gentlemen who have spoken, this will be one of the greatest influences to bringing new men and new inspiration into this organization, which, as Dr. Crouse has said, will have a salutary influence through the country, for the example of the Illinois State Dental Society is going to be emulated and imitated,

is not excelled, by other States; and the logical result should be that the National Dental Association will be made a truly representative and scientific organization, which we all can not agree that it is at present. (Applause.)

DR. TRUMAN W. BROPHY, of Chicago:

We all rejoice in the upbuilding of the Illinois State Dental Society, but when we make the statement that this is the largest dental organization in the world, I think we should look into the work that has been done on the other side of the water. I believe that this society surely will become ere long the largest dental organization in the world. But today the largest one is the British Dental Association, including in its membership over 1,400 men. We must also think of the percentage of the members of the profession who belong to our society. If we go to the other side of the water again, to the little country of Sweden, we will find that 80 per cent of the entire dental profession of that country belong to the National Dental Association, while in our own country less than 3 per cent of the dentists belong to our National Dental Association.

I have been highly gratified with the president's address. It has sentiments in it such as he always presents to us, and in the future, as at present, we will profit by what he writes.

Reference was made to the past. When I think of the great man who was really the founder of this society and of the Chicago Dental Society, which antedates this a little, I wonder if he were here what he would think of the present development of the Illinois State Dental Society. When we visit the place in Graceland cemetery, where his remains have been laid, and where a little monument has been erected over them, the question never dawns upon us, How much money did he have? Go to Stratford-on-Avon and look at the grave of Shakespeare, does any one ever ask, How wealthy was he? His wealth was distributed throughout the world; his wealth was his genius, so that all mankind has been benefited thereby. When George H. Cushing took the initiatory steps to found this society, the small beginning was made which has developed into a great organization that today stands as one of the prominent dental societies of the world.

I believe that this association should do more than to speak the name of this man. We should adopt some plan whereby his memory

may be preserved beyond simply mentioning it now and then. Through the works of these early practitioners we have an endowment whereby we profit daily.

When I think of those who have passed—Cushing, Dean, Miles, Sturgis, and many others—who were always present at these meetings and always contributed their best efforts, I feel that the society has changed, and we are now almost among strangers. We can not forget their works, but look to the future. I can see in this plan of organization great good, and great credit is due to those who have labored so hard in bringing it to the present stage. No one has a higher appreciation for the work that has been done by these men than myself, particularly that of Dr. Arthur D. Black and his associates, in bringing about our reorganization. But we must be constantly on the alert lest there will be backsliding members. It does not take much of an appeal to induce a young man, who is fresh and vigorous, to join such an association; but it is a different matter to get him to attend regularly and retain his membership, and I want to make a suggestion that in every local society the members should work vigorously with those that are inclined to be indifferent about the meetings. I asked a gentleman yesterday whether he was coming to this meeting, and he said he could not get away. The busiest men can get away to attend the State society meeting. (Applause.) There are men here who may not find it easy to get away, but they simply go. They are here; they always come. If there is any feature of this whole work of organization that will be embarrassing it will be in the apathy that is shown. We must keep the young men who display indifference interested; get them to attend these meetings, and make it a special point to stir them up to support their local organizations. (Applause.)

DR. J. G. REID, of Chicago:

I have been pleased to hear this address. Dr. Brophy suggested just now that we should take more recognition of the early organizers of this society. There are many new faces here today, and perhaps there will be many more tomorrow who are strangers at this meeting. I want to call attention to the fact that our librarian has in his possession, and on exhibition, photographs and autographs of many of the men who have departed this life, who were organizers of this society. These photographs are brought here every year for

you to look at, and every member is expected to send his photograph to the librarian.

I want to refer to another thing. If a man comes to this society or to his local society for ten or twelve years in succession and then misses a meeting, the members begin to wonder what is the matter with him. Although he may never have said a word, never read a paper or discussed one, he is missed. That sort of thing appeals to me strongly. When you become acquainted you will want to come every year, and when you have attended regularly for many years and then skip a meeting, your presence will be missed.

DR. EDMUND NOYES, of Chicago:

The value and advantage of personal contact has its chief importance in the application of it. Our friend, Dr. Bentley, made two or three important applications, and I want to make one more, as it seems to me, the most important of all.

The fate of this society in the future, as we have it now organized, will rest with the local societies. I wish I could make every man in the practice of dentistry realize that it is more important to him whether his next neighbor misunderstands him, misjudges his motives, underestimates his value, is mistaken as to the quality of the operations he makes, and does not realize how good and true and honest a practitioner of dentistry he is than it is if some man at a distance makes a similar misjudgment of him. It is in these local societies that personal contact and personal understanding and good fellowship will produce their richest and most important fruit. We have a most conspicuous example in Rockford, which has been cited so many times that I need only allude to it, but in every town, no matter how small, and if the dentists there be few or many, it is to their advantage, and still more to the advantage of the townspeople whom they serve, that they should be good friends; that they should understand each other, and work in co-operation and harmony. And the greatest advantage that will come from the reorganization of the State will come just in the communities where these local societies will accomplish the mutual understanding and the friendship of the men in practice. (Applause.)

DR. ARTHUR D. BLACK, of Chicago, was called upon and said:

I can not discuss the president's address, for the reason that, unfortunately, I did not hear it.

I will say a word, however, since reorganization work has been discussed more or less by previous speakers. To the gentleman from Iowa I would say that they will have to study carefully President Roosevelt's articles on race suicide if they raise enough dentists in Iowa to keep up with this State. (Laughter and applause.)

In regard to Dr. Brophy's remarks as to the number of dentists in the British Dental Association, if we were to look over the books of that association, I doubt if we would find 1,200 men who had actually paid their dues for any one year, notwithstanding they may have several hundred men more than we have on their roll. I call his attention to the fact that on the new basis, membership in the Illinois State Dental Society is a cash proposition, and no man is counted a member unless he has paid his dues. For the reorganization committee, I would like to say that one of the pleasant features of the work of this committee has been the hearty response and assistance they have received from the sub-committee, and from the dentists all over the State. We did not have to beg many men to come in. Most of them saw that it was a good proposition, and they were willing to come in. We have had absolute harmony throughout the entire State in carrying out our organization work, and it has made the work of your committee much easier on that account than it otherwise would have been, and I wish to take this opportunity to thank the men for their assistance, and to assure them that we fully appreciate their support in this work. (Applause.)

CHICAGO DENTAL SOCIETY.

A regular meeting was held February 7, 1905, with the president, Dr. Thomas L. Gilmer, in the chair.

Dr. C. S. Case read a paper entitled "Non-Eruption of Teeth Due to Impaction; Their Liberation and Restoration."

DISCUSSION.

DR. C. P. PRUYN:

Mr. President and Gentlemen: Until the advent of the Roentgen ray we had not the faintest idea that teeth that were missing from the arch might be found somewhere in the jaw. Since this

discovery we are able to do much better work than we did before. But it is only a very limited number of men who avail themselves of the Roentgen ray, because the man in general practice gives but little attention to this class of cases. For my own part, I am very glad, indeed, to refer such cases to men like Dr. Case and Dr. Lourie, who can do the work better than I can.

I have been instructed by this paper, and, I think we are under obligations to Dr. Case for having presented it. I take off my hat to the men who are showing the possibilities of this particular specialty of dentistry. If those men in the medical profession who think that dentistry is a part of their profession could have been here to hear this paper, it would have opened their eyes to this specialty of a specialty, showing that it needs a man of trained skill and careful attention to details to master this one particular specialty.

DR. LLOYD S. LOURIE:

I have been very much interested in this paper and wish to express my appreciation of the work and thought involved in its preparation. The majority of the profession do not, I believe, realize the harm that may be done by impacted teeth. They are in the habit of looking at any irregular tooth entirely with respect to that one tooth, without considering its effect on all the others.

Impacted teeth are responsible for many irregularities, even the third molars, because of the fact that after they get started in a mesial direction they may influence the position of the whole set of teeth. I have seen cases in which the whole lower set had been moved forward bodily, resulting in pronounced mesial occlusion. Only last week a case came under my observation in which the left side of the lower jaw had been lengthened fully half an inch, and the only cause to which the deformity could be attributed was an impacted third molar on that side.

I further consider this paper of value because it particularly emphasizes the necessity of the X-ray in diagnosis; but there is one point on which I wish to differ. I am one of those who advocate and practice distal movement of molars and bicuspids to make room in the arch for irregular teeth. I appreciate the gravity of such an undertaking, and the profession should be grateful to Dr. Cryer for throwing out that warning, calling attention to the danger

of distal movement of molars; but I can not agree with the theory as developed by Dr. Case, when he says that impaction of the third molar will undoubtedly occur. I do not think that it is a certain consequence of such distal movement, and no evidence is given in support of such theory. In those cases in which it is advisable to thus move these teeth, they are usually found in a mesial position, having moved forward, possibly, on account of loss of temporary molars, either through decay or premature extraction. There is a natural tendency in these teeth to move forward. But why should not these molars be moved distally to their normal position, and that without producing harm? I believe it is only in the last few years that such movement has been made intentionally, though it had probably been accomplished many times unwittingly. Dr. Case showed such a case tonight. I refer to the case where room was made for impacted lower second bicuspid, the models showing considerable distal movement of the molars. Many who are present know that in my practice distal movement of molars and bicuspid is a frequent occurrence, and I simply wish to place myself on record in defense of the procedure.

In fact, until there is evidence that damage results from such practice, I shall not believe it a wrong thing to do in cases such as mentioned.

DR. T. W. BROPHY:

While Dr. Case was describing the success he had in moving teeth from their impacted places in the maxillary bones to their normal positions so that they would serve the purpose for which they were intended; while I marveled at the skill and training of a man who would undertake a thing like that, which twenty-five years ago was unheard of, another thought came to me, and that is, the pathology of this condition.

While this is purely an anomaly in anatomy, it is a part of anatomy on which textbooks and teachers of anatomy do not touch; and it is a part of pathology almost unknown to medical literature. If these impacted teeth are not brought into proper position, what will occur? The movement of these teeth and the pressure of their developing parts may come in contact with a nerve that passes through the anterior palatine foramen and give rise to persistent, long continued and excruciating neuralgia. There is little on this subject in the literature, except in dental literature.

Just eight years ago this month a patient came to Chicago who had been for eighteen months under the treatment of the most distinguished surgeon America ever produced, Dr. S. D. Gross, of Philadelphia. She came into the hands of Professor Deerie, of this city, and he discovered two teeth deeply impacted in the bone without any protuberance to indicate their position. This discovery was made long before the Roentgen ray was discovered.

If such teeth are removed, the patient will recover from the pressure neuralgia. Although, on examination, we find the full complement of the teeth present, supernumerary teeth may cause disturbances of this kind. Nobody ever will know how many thousands have taken medicines for years for the relief of pain caused by impacted teeth, and nobody knows how many are now doing so.

In any case of neuralgia, it is our duty to have a radiograph taken. If the skiagraph is negative, you have, at least, done your duty. An inverted third molar is a common cause of facial neuralgia, the crown of the tooth pressing on the nerves passing through the inferior dental canal. I can not imagine how a tooth could be in that position without producing such results.

A few weeks ago I removed a tooth that passed up into the sigmoid notch and was expressive of the same condition that Dr. Case described.

So much might be said along this line, but I have said enough to point out the frequency of the condition. I believe that 80 or 85 per cent of all cases of facial neuralgia are of dental origin, and yet how little we find in medical literature on the subject.

I trust this paper will have a lasting effect in prompting us to make further investigations by the use of the X-ray, so that we may know whether supernumerary or impacted teeth are factors in causing trouble.

DR. L. W. NEVIUS:

About six weeks ago I had two ladies in one week with impacted upper cuspids. They had worn plates for a number of years. In one case there was no indication of the presence of the tooth; it was a supernumerary tooth. The other was a case of normal impacted cuspid.

This afternoon I had a young man of twenty, with a left lower

cuspid erupting just between the central incisors. I extracted the tooth.

DR. F. B. NOYES:

I have been very much interested in the relations shown between impacted teeth and supernumerary teeth, and impacted teeth and odontomata. These are masses of tooth structure without definite form, and without sufficient force behind them to erupt them, and lying over a tooth in the progress of eruption, it would naturally block its path.

There is another point in the paper that I wish to emphasize, and that is the importance of taking a skiagraph before we state positively that the missing tooth is present in the jaw. This is especially important in cases where the temporary teeth are retained. It is our duty to be sure of that fact before we extract the temporary teeth. If there is no permanent tooth there to take its place, we are doing the patient an injustice by depriving him of what he needs.

I had a case of that kind, four molars and two central incisors in the upper jaw doing duty as permanent teeth. A skiagraph showed no trace of the permanent teeth. The temporary teeth were filled with gold, and the man has a fair masticating surface.

In examining skiagraphs we must be careful to avoid misinterpreting distortions, which are seen occasionally, and which are due to the technic employed in taking the skiagraph.

DR. A. D. BLACK:

I would like to call attention to one point in connection with the presence of supernumerary teeth; that they are practically always confined to the upper jaw. I have seen but one case of supernumerary teeth in the lower jaw. This case I discovered in a cadaver, a supernumerary tooth of the protocone type, located between and to the buccal of the lower right bicuspid.

Another point of importance with malposed teeth is in cases of exostosis, in which the roots of two or more teeth unite and it is, of course, impossible to bring the teeth into alignment. I have here a specimen of three molars united, the roots being perfectly solid.

DR. L. H. ARNOLD:

I have a case at my office in which a very beautiful upper

lateral occurs in the lower jaw as a supernumerary tooth. I found the condition in a man, aged about twenty-five, some years ago.

DR CASE (closing the discussion):

I am gratified with the reception my paper has received, but I was surprised that some one did not ask how old a patient could be before they could have an impacted tooth restored. I brought the models of the oldest case I have had, a lady, aged fifty, who had a completely impacted cuspid lying beneath the deciduous cuspid, which had been removed. I brought that tooth into its proper place.

In regard to Dr. Lourie's remarks: He could not have followed my paper very closely. He seems to think that I am opposed to the distal movement of the buccal teeth, and he also seems to carry the idea that that procedure is of recent origin. The distal movement of buccal teeth was advocated long before I ever attempted to regulate teeth, and for those very instances which he cited. If Dr. Lourie followed my teaching for many years he would see that I have appliances showing that it is quite desirable to move teeth distally that have moved forward through local influences. All dentists do the same thing, because such teeth should be placed back in their natural position.

I am not opposed to the distal movement of teeth that have moved from their natural position, as I stated very distinctly in my paper.

THE ODONTOGRAPHIC SOCIETY OF CHICAGO.

A regular meeting was held April 17, 1905, with the president, Dr. F. G. Roach, in the chair.

Dr. A. D. Spach read a paper, by invitation, entitled "Diet in Relation to Health and Disease."

DISCUSSION.

DR. T. E. POWELL:

Mr. President: It seems to be my misfortune to be called on to discuss papers without any previous notice. If I had received six weeks' notice, I should feel myself incompetent to discuss this paper. However, I wish to congratulate the essayist on the practical and

scientific paper which he has given us. I enjoyed it very much, and I am sure when it is printed we will receive much benefit from its perusal and study.

Diet is certainly a very important and practical subject, one, it seems to me, that we should discuss more frequently than we do in our meetings, and since our work is directed largely toward the end that food may be properly prepared for the fluids of the mouth and digestive apparatus, it is of the utmost importance to us. The essayist spoke in the beginning about food idiosyncrasies, citing the case of a patient whom he knew that could not partake of egg under any circumstances without being poisoned. I knew of a similar case in the country where I lived when I was a boy. A young lady could not eat egg at all without making her violently ill. I have often thought of that. Her parents thought it was a notion on her part. They disguised the egg in various foods, but the least particle of egg entering into the food of which she partook had a very unpleasant effect, making her ill. I have often thought it was possibly the large amount of phosphorus in the egg that caused the illness. Some persons are peculiarly susceptible to phosphorus, and there are many people who are very susceptible to the influence of arsenic. There are others who are extremely susceptible to the influence of mercury. We find in our practice that one person is much more susceptible to a drug than others. Some people can use with impunity large quantities of arsenic, mercury, phosphorus or other drugs without any apparent harm; but another person, taking a small amount of this or that drug, will meet with disastrous consequences. I think it is very important for use to know definitely just how much food is necessary to sustain the human machine in action during the twenty-four hours. Of course, it is definitely known that a certain amount of fats and a certain amount of other kinds of foods are essential.

There is another thing we should take into consideration, and it is this: It is not simply the different kinds of food that are necessary to sustain the human machine, but we must consider the fact that the different organs of the body require a certain amount of exercise, so that it is not only the kind of food that is taken into the human stomach, but it is the quantity of the food as well. For instance, a vegetable diet, while not absolutely necessary to sustain life

for a short time, during the period of a whole lifetime, we would find quite necessary, because the organs of the body must have something to work upon or else they become defective in their action. Suppose we were to try to live on a diet of compressed tablets. We frequently get samples of tablets in our practice supposed to contain all the nourishment that is necessary to sustain life indefinitely. They tell us to take these tablets in our pockets when we go out for a day's outing. As a practical thing, it would not do at all, because if we were to try to live on this condensed food we would find the organs of the body from disuse would become atrophied and imperfect; they would not perform the functions for which they were intended.

The carnivora and the herbivora are distinct animal types, and the omnivora is a type which combines the two. Man, as an omnivorous animal, must have both a vegetable and a meat diet. As I said before in the discussion of a paper (I think it was Dr. Cigrand's), one great cause of general derangement of the dietary of the human family is the way in which they prepare the food for the stomach. All the carnivora take their meat raw, chop it up, and take it into the stomach in that state. The carnivora have a short digestive apparatus; the herbivora have a long, complicated apparatus. But the carnivora take food raw and it requires simply the digestive apparatus to take care of it and convert it into heat units. Most of us, when we lived on a farm, had our meat overcooked and ate too much. We required too much to produce a sufficient number of heat units to keep us going. If our meat and the rest of the food be properly prepared before we take it into the mouth, it would be much better for us.

Another thing we do not want to forget, and that is the necessity for fine comminution of the food before it is taken into the stomach. The essayist stated that potatoes and bread are necessary to sustain human life. He told us how much it is necessary to take each twenty-four hours; but he did not tell us that much of the digestion of the starches take place in the mouth, and if they are not digested in the mouth they will put too much work on the stomach, and some of it would be eliminated in the raw state without having been converted into heat units; so that we should emphasize that part of the paper—the necessity for chewing the food and mixing it with the saliva, so that the ptyalin of the saliva will have an opportunity to convert

a part of the starches into sugar, so that when the sugar goes into the digestive tract it will be assimilated and be converted into heat units.

I think in my short opening remarks I have indicated the lines which, in my opinion, the discussion should follow in order to make it practical, and with that I will leave the subject to the gentlemen who are to follow me.

DR. FRED B. NOYES:

The essayist has very nicely pointed out the practical value and necessity of a certain amount of food. I think we need only to observe the general habits of men to find out that those of rugged constitution, wiry men, as we say, men who go through a long period of active life, are, as a rule, neither heavy nor light eaters, but regular eaters. You see a man who always eats a certain amount, who leaves a clean plate at the end of the meal; always, as a rule, you find that man has lived with comparatively little sickness. On the other hand, the man whose eating is dependent upon his appetite is almost always more or less liable to short periods of sickness, for he will at times overeat, and at other times undereat, and the result is a liability to certain diseased conditions from both causes. He is worried. He is overworked, and he will undereat at a time when he should overeat. If he is taking a vacation, if he is having a good time, with pleasant company, he will overeat at a time when he had better undereat.

There is a certain profitable comparison between the consideration of the number of heat units and the recognition of the value of the energy which is required from food. I happened to have seen a number of striking illustrations of the amount of food which was readily taken by certain men who had always impressed me as men of enormous energy. They required a greater amount of energy than other men. They exerted a greater amount of energy. The machine was consuming a greater amount of fuel and giving off a greater amount of energy, and that energy must be supplied to the system or the system runs at a loss. That was the interesting and important feature of the paper, the presentation of the amount of heat units that was required, and the sources from which we receive them in a practical way. What Dr. Powell said should be emphasized. There is no doubt in my judgment that a great many men partake of more food than they need, because it is not properly prepared for digestion by the mouth. The amount of time we spend in the chewing

of food prepares the material for digestion in such a way that the organs of digestion get more good out of a smaller than otherwise out of a larger amount.

There is another feature in connection with the partaking of food which should be emphasized along the lines of the paper, and that is, the digestion of food requires a certain condition of the circulatory system. In order for the food to be properly digested, the digestive organs must be actively functional. In order to be functional, they must receive a larger amount of blood than normal. The distribution of blood in the body is controlled by the vaso-motor mechanism acting through the arterial walls, controlling the set of valves in the direction in which the blood is to go. That is a reflex control. But, like other reflexes, it can be inhibited. For that reason, after a meal, the normal reflex effect of the food in the stomach is to open the valves which supply blood to the digestive system and throw the largest amount of blood into active circulation for the organs of digestion. If immediately after taking that food a person is required to concentrate his mind or energy on either mental or physical work, the normal reflex is inhibited. A normal increase of circulation in these organs is not obtained, and for a time an abnormal increase of circulation to the muscles of the brain occurs. We can not supply both at once, consequently we will have indigestion, imperfect supply of blood, imperfect forms of digestion and of absorption. On the other hand, we may have another result. We may be unable to work, feeling dull and heavy, because the normal reflex is not inhibited, and the brain does not receive as much blood as it requires to perform the work which one is attempting to do. For that reason the heavier supplies of food should be taken at a time when further active energies are not called for. Thus, the dentist should take a light lunch, and, in my judgment, a comparatively light breakfast; but he is free to take the greater part of his food at the evening meal, when he is supposed to have his evening free from the more strenuous activities of mind and body. That is the only excuse we can give for stenographers taking light lunches. In some cases they may be justified. They need something, but they do not need a heavy meal at noon, because they must go back to the acute concentration of mind necessary for the rapid execution of detailed performance, which is impossible without a strong supply of blood in the central nervous

system. Their meals are sufficient to sustain them temporarily until they get the heavier meal after the day's work is over, when the central nervous system no longer requires its unusual supply.

I think it does us all good to widen our outlook occasionally upon matters of our own health instead of matters of detailed technical performance. I wished while the Doctor was reading the paper he had given us a few answers to some of the questions we get in regard to diet of special conditions. For instance, the question as to whether or not a certain diet is required for children during the development of the permanent teeth; and whether there are cases in which a special nutrition or special diet will help apparently the imperfect formation of bone and tooth tissues—a question which has been doubtful in my mind. It has always seemed to me that a proper food supply, if properly digested, contained all the required elements; but perhaps there are cases in which these elements are lacking.

I have been much interested in the paper, and wish to compliment the essayist on the clear and concise way in which the food products were presented, the amount of food to be used and the different kinds of food that are required.

DR. J. P. BUCKLEY:

I appreciate the value of the paper, and particularly that part of it in which the essayist emphasizes the importance of a knowledge of physiological chemistry. I am glad to know that medical men as well as ourselves have to turn to chemistry in order to get a solution of the various problems with which our professions are confronted. I would have been interest in the paper a little more if the Doctor could have taken this subject up with reference to some of the diseases with which we as dentists are confronted. I believe the time will come when we will treat erosions and certain phases of pyorrhea alveolaris by dieting our patients. Dr. Kirk has brought out the fact, supposedly at least, that erosions are due to two causes, one cause where the erosion of the teeth shows that we have an acid secretion from the buccal mucous glands. If it is a fact that we have acid sodium phosphate floating in the blood, by giving a certain amount of the alkaline salts, or by prescribing a certain diet, we may overcome that acid condition of the blood and prevent the erosion of the teeth. Drs. Kirk, Pierce and others have demonstrated the fact, to their satis-

faction at least, that the deposits which are removed from teeth, especially in certain cases of pyorrhea—none of us will attempt to say all kinds of pyorrhea—there are urates; and they have associated with this particular kind of pyorrhea alveolaris the uric acid diathesis. If that is true, and I think we will come to learn that it is true, we will treat certain kinds of pyorrhea by dieting our patients or by having them take certain kinds of food. It is a fact that most of us, especially those who like but little outdoor exercise, eat too much meat. We get too much nitrogen, to which the Doctor has referred; and he says that the nitrogen which comes from the proteids found in vegetables does not sustain proper metabolism; that we should have a certain amount of meat in order to get a proper amount of nitrogen. But we eat too much meat, nevertheless, particularly those of us who are engaged in indoor work, especially when we are not out in the air where we can increase oxidation.

DR. GEORGE W. COOK:

The essayist has touched upon some interesting points in this discussion, and, like Dr. Buckley, I wish the line of argument could have been carried a little further in some respects. The work of Halliburton on the subject of diet is interesting, and, it seems to me, that when we say we do not get enough nitrogen from a vegetable diet we are mistaken. This was borne out pretty well by the armies when they fed the soldiers on pork and beans. The pork contained probably the principal part of fat and the beans contain a sufficient amount of nitrogen to bring about the proper amount of energy to be carried into the individual.

There is, of course, a great deal to be said pro and con regarding the subject of diet with reference to certain functional changes in the body, and especially the bringing about of certain tendencies to disease, particularly infectious diseases. It is pretty well borne out, however, that our greatest difficulty in connection with the digestive apparatus and of taking care of food is not so much due to the secretions therein, as it is to the entrance of certain low forms of life, like bacteria, passing through the stomach and into the intestinal tract, where the absorption of all food products takes place, and that being true, perhaps the cells of the digestive tract are not as active in a certain class of people as they are in others, consequently starvation of the individual takes place through the destruction of food products

or of changes in such manner as to prevent them from being used as food for the body of the individual. Adami, of Montreal, has done an extensive amount of work on this subject; and Simons, of Baltimore, has elucidated these points with reference to starvation among people who look in perfect health. They are lacking in certain kinds of diet.

I think a paper that interested everyone was the one read by Dr. Ottofy, of Manila, at the International Dental Congress, in which he dwelt upon erosions of the teeth among the Oriental people. He did not make any special claims as to his conclusions being correct, but he showed very clearly how people of certain sections of the country suffered from certain diseases, and that these were traced back by the government of that country to fertilization of the land upon which the vegetable products that were used grew. In other words, fertilization played an important role. If we cultivate beans or peas, and certain products of that nature, on a certain soil, it is known that they do not contain a sufficient amount of nitrogen; but if the soil is so fertilized that these plants can take in nitrogen, there will be a sufficient amount deposited in the products, and the food will be more easily assimilated than some forms of meat.

I have been extremely interested in the paper, and I am very glad that occasionally we can have a physician read a paper of this character to stimulate us to think about something else besides simply boring little pinholes in the teeth and plugging them up. We need papers of this kind.

DR. C. F. HARTT:

I am of the opinion that a man's mental condition has fully as much to do with his digestion as the quantity or the quality of the food he may or may not take. This phase of the subject has not been discussed this evening. I think mentally the man who is happy, harmonious, and has no great amount of worry will have less trouble in digesting his food than the one who is worried and perplexed.

I would like to ask the author of the paper two questions. First, what relation Mrs. Eddy bears to the subject-matter of the paper? Second, whether the author has ever read Mrs. Eddy's book on "Science and Health?" (These questions were not answered.)

DR. CLARENCE H. WRIGHT:

One of the common failings of humanity is a tendency toward going to extremes, and the Christian Scientist, vegetarians, and other foolish classes are examples of this tendency. The people of the far north countries would be in a bad way if they undertook vegetarianism. People of our class and in our climate, more or less sedentary, and closely confined, should adopt a mixed diet—a variety including a moderate amount of meat. Temperance and moderation in all things constitute a valuable doctrine. In our civilization we frequently overstep the bounds of common sense. A conspicuous example is found in our bread. Our staff of life, used by practically all the people at every meal, I believe, is very imperfect. Upon investigation we find that the progressive live stock breeder, who wishes to produce in his young animal the greatest growth of muscle, bone and constitution, feeds them middlings. Middlings are the parts of the wheat which we discard in making our flour, and contain phosphates and other valuable elements. The demand is for white, fluffy bread, regardless of food value. Also much of our food is too finely prepared, particularly many of the so-called health foods. If our foods were coarser, they would demand more thorough mastication, which would at least be of great benefit to the teeth, and I believe would prevent or lessen the extent of pyorrhea.

DR. B. J. CIGRAND:

We have had the pleasure this evening of listening to a paper which some years ago might have been pronounced out of accord with our character of work, and yet it is being recognized every day that the subject of dietetics is an important part of our curriculum and work.

I quite agree with Dr. Powell that Nature constructed each and every one of us upon a certain definite plan, and that possibly a diet that would suit me would not under any circumstances suit some other person.

The animal kingdom is divided into two classes, meat-eating and cereals, or vegetable-eating; and the human kingdom is subdivided into those who prefer meat, and others who prefer cereals. The person's jaw, as well as the evolution and development of the teeth indicate his choice of food and the jaws move largely upon what is the general diet of the individual, whether the food creates the character of the teeth or *vice versa*, I know not. That the present generation

of people are suffering considerably because of no general or definite knowledge on the subject of importance of jaw action is self-evident. At the present time our journals are filled with beautiful theories, and we have magazine articles and newspaper articles written, in which it is clearly stated that the formula of diet and life should read: "A certain person, with a certain work to perform, should be given a certain amount of food and at a certain time a certain kind of nourishment." That is all too lovely to be true. I believe one's own habit and appetite largely dictates what he shall eat and how much he shall eat. Emerson summed it up very well when he said: "Some do not eat for the good of living—but because the appetite is keen." We, especially of the dental profession, eat more than we really can assimilate. We eat too much meats and do not have sufficient physical exercise to use up the meat elements. That the etiology of erosion, of pyrrhoea alveolaris and of tuberculosis may yet some day be solved by dietary means, I believe to be true. There was one reference made that consumption might be due to diet, and the question naturally arises, How is it possible for a person to acquire this disease through the food he eats? The only explanation I can see for that would be, as I stated in a recent paper, that we do not eat properly. We do not masticate our food sufficiently long, not for the purpose alone of grinding it down to a powder, or in any way crushing it, but the fact that we are eliminating from the food the saliva. The tendency of the present day, I believe, is to eliminate or dispense with the use of saliva. Most of our foods are prepared in such a way that we drink them or take them in the form of soups, hence lessening jaw movement, and we must have the action of the jaw if we wish the flow of the saliva. The sebaceous foods that are often taken are injurious, because we do not get sufficient flow of saliva from the mouth, which is physiologically necessary, and we must have action of the jaws. We pour into our stomachs food that is not bathed sufficiently with saliva. Saliva must be a constituent in the morsel before it goes to the stomach. I am of the opinion that consumption results largely because of an impoverishment of nutrition, which brings on a breaking-down of the system, a general exhaustion, and whenever we find a man or woman, I do not care what his or her ancestry is, when he or she is thoroughly run down, so to speak, lacks ambition, and sapped of all neural energy, when there is

no vitalization, we see a person who is in a splendid condition for the beginning of the tubercular elements to work. Dr. Kidd, of London, makes the statement that today we lack the use of the saliva, and that if appendicitis is occurring in the United States and occurring throughout the civilized world so frequently, it is because we do not masticate our foods sufficiently and bolt the food, which lodges sluggishly in the bowels, and because the flow of saliva is retarded somewhat by artificial methods of living today. Saliva is intended for a very decided purpose, and the physiological side of this subject is the one that will possibly in the future give us the results that are now merely hinted at. The subject of cell physiology referred to by Dr. Buckley is worthy of consideration.

This subject is interesting to us because, aside from the fact that it makes us think, it teaches us how to live, and I wish to thank the essayist very much for the thoughts he has given us.

DR. SPACH (closing):

It is my observation, extending over a period of many years, that where we find delayed dentition in infants, or defective dentition, it is due to a deficiency in proteids. Bottle-fed babies, who have been given for a considerable period some of the cereal or patent foods, or condensed milk in which large quantities of cane sugar predominate, are very prone to exhibit trouble in the eruption of their temporary teeth. Unless this defect in nutrition is corrected, defective dentition is apt to extend over into the second period, or the eruption of the permanent teeth. In brief, it is proteid starvation.

Now, as to a mixed diet. That has been extensively discussed here tonight, and much still can be said on the subject. Experience and extensive scientific observation go to prove that a mixed diet—that is, a diet of animal and vegetable food—is best suited to the human stomach and human organism. A vegetable diet alone is disastrous. A non-meat diet can be arranged like this: Ten ounces of bread, two ounces of oatmeal, two to three pints of milk, two and a half ounces of cheese, one ounce of nuts, two ounces of butter, eighteen ounces of fruit and vegetables. This diet yields 2,500 to 2,800 calories, or heat units, and is well sustaining. I have maintained patients on this diet for years, and they have thrived and done their work as well as those on a meat diet. This is a mixed diet and contains animal food. This diet contains an ample amount of animal

proteid that is digestible and easily assimilated. Some people who suffer from headaches or some from so-called chronic rheumatism maintain good health and a comfortable well being on this diet. This is Haig's diet. In truth, they know well that they dare not attempt any other diet for any considerable length of time.

Whether it is uric acid or what not in the meat, I know not. Faulty premises necessitating faulty deductions have put us somewhat at sea as to what role uric acid plays in the causation of disease.

With a sound pathology, physiological chemistry, undoubtedly, in the near future will shed light on this and many other unsolved problems as to diet in health and diet in disease.

Physicians and dentists, to be scientific, must be physiological chemists. They must be thoroughly grounded in a sound pathology. They should always be seekers after the truth, the real science, and not follow blindly with a sheep's intellect what some person has dreamed or imagined. They can not then become faddists and will not then follow after false gods into the pseudo-scientific, into the visionary or chimerical.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

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EDITORIAL.

A NEW DENTAL LAW FOR ILLINOIS.

In this issue we publish the text of a new dental law enacted by the legislature of Illinois. The bill was introduced and championed by Senator A. C. Clark, to whom the dental profession and particularly the people of the State owe a debt of gratitude. Senator Clark worked unceasingly for the bill in the face of much opposition from those who believed it to be to their interests to defeat it. Even after its passage a persistent movement was made to induce the Governor to veto it, but Governor Deneen, after a careful consideration of the merits of the bill and the necessity of a better protection of the people of the State sealed it with his approval. This is greatly to the Governor's credit because it has generally been recognized that Illinois was far behind her sister States in dental legislation. The present bill places much responsibility on the State Board, on account of the great power given it, and it becomes very important that none but the best and most judicious men receive appointment. This is something the profession must watch very carefully, and it is confidently believed that with the record Governor Deneen has already made the interests of the people will be conscientiously conserved at his hands by the appointment of good, reliable men.

THE MEETING OF THE ILLINOIS STATE DENTAL SOCIETY.

The recent meeting of this society at Moline, May 9, 10, 11, was a record breaker so far as State dental organizations was concerned. The reorganization movement has resulted in a membership of about 1,200, and of this number there were fully 500 in attendance. This makes a meeting with much inspiration to it, and the one just finished will long be remembered by those who were fortunate enough

to be present. It was feared by some that a meeting of this size would prove unwieldy, but the fears were entirely groundless. Every one present worked with a will and there was not a moment of waste time. The members came to the meeting apparently imbued with the spirit of earnest effort, and there was not a lag in the proceedings from beginning to end. Although the program was large for a three days' meeting, it was entirely completed by the final session, and every paper read was vigorously discussed. The papers were of an excellent order, and the proceedings will furnish interesting reading to those who were unable to attend.

The impetus given the society by this meeting will prove of lasting benefit to dental interests in this State, and it now remains for the movement thus inaugurated to be carried on in future years to the fullest possible fruition. Let every dentist in the State work to this end, and aid in making the splendid achievement of the reorganization committee a permanent and steady growth.

BOOK REVIEWS.

THE ROLE OF MODERN DIETETICS IN THE CAUSATION OF DISEASE. By J. Sim Wallace, M. D., D. Sc., L. D. S., Hon. Dental Surgeon West End Hospital for Nervous Diseases, and Assistant Dental Surgeon National Dental Hospital, W. Cloth, 87 pages. Published by Bailliere, Tindall and Cox. London. 1905.

The author of this book is well known as a capable writer on the topic under consideration. Much of the present volume is taken from papers on the subject published in the various journals in recent years, and here gathered into a coherent whole. It is a very attractive volume and well worth a careful study.

GRAY'S ANATOMY. Messrs. Lea Brothers & Co. announce a new edition of this standard work to appear about midsummer, embodying nearly two years of labor on the part of the editor, J. Chalmers Da Costa, M. D., and a corps of assistants. More than 400 new and elaborate engravings in black and colors have been prepared for the work, adapting it in every way to present-day teaching methods. The new edition will be looked for with great interest by students and practitioners.

PRACTICAL HINTS DEPARTMENT.

Answer:—In answer to L. P. Leonard's request in last month's issue as to what would remove silver nitrate stains from enamel I would suggest using a disk, either sand paper or emery, not too coarse, if a disk can be employed in the region of the tooth involved. Grind off the stain and then polish the enamel.—*I. T. O. R.*

Shading Porcelain with Cements:—To ascertain the effect a certain color of cement will produce on an inlay, mix the powder with water, place it in the cavity and force the inlay to place over it. This gives the same effect in appearance as mixing with phosphoric acid. In this way a test may be made before the actual setting, and the correct shade of cement powder selected.—*F. E. Cheeseman, Chicago.*

Preparation to Stop Pain in a Tooth:—The following preparation has been found effective in relieving pain in a tooth where other remedies, usually employed, have produced no results:

Carbolic acid	dr. 1
Oil Sassafras	dr. 2
Eugenol	dr. 2
4 per cent Solution Cocaine	dr. 1

In having the preparation made up be sure that *Eugenol* is used and not oil of cloves.—*E. G. McAbrey, Chicago.*

Obtaining Perfect Contact Point and Correct Occlusion in Large Porcelain Inlay Restorations Method:—Fill matrix nearly to occlusion with porcelain in the ordinary way, being careful not to have any cracks in the margin of the matrix, or checks in the margin of the porcelain. Place this partially completed inlay in the cavity and obtain an impression and bite with modeling compound similar to a "mush" bite. After removal from the mouth, flow a film of soft wax over the cavity surface of the matrix and place it in its relative position in the impression. Pour models with plaster and mount on articulator. After removing the modeling compound flow cold water over the inlay to harden the wax and the result will be a perfect imprint of the matrix in wax. The inlay may then be removed and replaced at will and built up with porcelain to exact occlusion and contact.—*F. E. Cheeseman, Chicago.*

TO THE EDITOR:

On May 15th Mr. P. called at my office suffering, as he said, from a tooth. Upon examining his mouth, I found a cavity in the right superior first molar, which covered the entire mesial surface to gingival margin and a portion of the occlusal surface, but the cavity was very shallow, with a floor in all directions of hard, healthy dentine.

Just above the buccal roots the surrounding tissue was swollen about the size of a large olive, was very sensitive to pressure and pained him some. I examined cavity closely, found tooth to be sensitive at dento-enamel junction and was not sore at all.

I then asked why he thought the trouble was caused from his tooth. He replied that the tooth had been filled some time before and the filling came out about two or three days previous to the time the trouble first manifested itself, but that the tooth itself had never ached and had never been sore. I then examined the swollen parts again, and thought that I could detect slight crepitation. So I made a free incision through it to the bone. To my surprise I found no pus nor exudation of any kind, and the gum did not bleed as much as it would have had it been in a normal condition, but the incised parts stood open.

I told him to return next day and let me see it again. When he came I found exactly the same conditions present as before. Possibly it was swollen just a little more and there was some fever in his cheek. There were no signs of any antrum trouble.

I painted the gum with tincture of iodine and let him go. Saw him on the 19th for the first time since then and he said the pain had subsided, but the swelling remained. He said he had received no blow or injury of any kind.

I shall be glad to read an opinion from the editor and others in the next issue of THE REVIEW.—*J. N. C. Moffat, Houston, Miss.*

NOTE.—The editor will have something to say about this case in the next issue. In the meantime if anyone has had similar experience, we will be pleased to hear from him.



DR. JOSEPH ANTHONY BOWMAN.

OBITUARY.

DR. JOSEPH ANTHONY BOWMAN.

The following obituary notice of a prominent dentist of the Northwest is copied from the *Minneapolis Tribune* of May 8, 1905:

Dr. Joseph Anthony Bowman, who, prior to last September, had lived in Minneapolis for nearly thirty-eight years, died yesterday morning at his home in Bethel, Vermont.

He practiced dentistry in Minneapolis for many years, and after retiring from his profession last summer he returned to Vermont and lived on his farm.

He was one of the best known among the pioneer citizens of this state. At the time of his death he was approaching his sixty-eighth birthday, which would occur on June 10.

Dr. Bowman was born near his last place of residence, Barnard, Vt., in 1837, coming from that old New England stock which has given to the west so many of its able citizens. A man of sterling qualities, he numbered among his friends hundreds of the men who have made themselves noted in Minnesota. He received his education primarily in the public schools of his native town, and later graduated from the academies of Royalton and Newberry, Vt.

As early as 1855 he commenced the study of his profession in Ludloy, in his native state. In company with his brother, he later removed to Canton, N. Y., and there they formed a partnership in dentistry which continued until 1862. In that year Dr. Bowman entered the army, under the command of General John P. Slough, military governor of Virginia.

At the close of the war he came to Minneapolis, taking up again the practice of his profession. His office at that time was located in the Center block, one of the earliest buildings on Bridge square. In 1870 he removed to the corner of Washington and First avenue south, entering into partnership with Dr. E. M. Griswold, which lasted until 1882. Two years later, together with Dr. T. E. Weeks and Dr. M. G. Jenison, the firm of Bowman, Weeks & Jenison was formed. After the termination of that relation in 1891, he was associated in business with Dr. A. E. Peck.

During his entire residence in Minneapolis he was an active practitioner in his calling. He was numbered among the founders of the Minnesota State Dental Association, being its first vice-president and later was the president of the association.

In common with other members of his family Dr. Bowman possessed marked ability as a musician and took a keen interest in the various societies which were formed for advancement along musical lines.

In 1862 he was married at Canton, N. Y., to Miss Mary Jenison, daughter of Judge Minot Jenison, of that city. Their only son, George F., died in 1881.

Dr. Bowman was a member of the Church of the Redeemer while living in Minneapolis. He was a man of strong character, of irreproachable integrity and was among the foremost in his profession in Minnesota.

COMMENCEMENT EXERCISES.

LINCOLN DENTAL COLLEGE.

GRADUATES.

Arthur Belford Gifford, William Alvan Housel, John Reams Kirk, Bruce Climan Meredith, Doc Leonard Redfern, Mihran Hacher Torossian.

BARNES DENTAL COLLEGE, DENTAL DEPARTMENT OF BARNES UNIVERSITY.

GRADUATES.

C. P. Strawn, F. H. Lohmeyer, W. A. Solomon, W. L. Lynes, T. F. Magers, J. M. McKim Jr., L. H. O'Brien.

The first honorable mention was awarded to Dr. Cleo Park Strawn, St. Louis, Mo., for the best general examination.

The second honorable mention was awarded to William Asbury Solomon, Palmyra, Ill.

NORTH PACIFIC DENTAL COLLEGE.

CLASS ROLL.

J. Aylwin, G. J. Bacher, C. F. Becker, M. M. Bettman, R. N. Brewster, H. E. Burmester, C. S. Collier, H. G. Davis, W. S. Dorfner, S. C. Endicott, E. B. Flett, W. M. Gallagher, J. Gill, B. N. Hamm, H. A. Harr, W. E. Hartel, F. D. Hasbrouck, E. Hirstel, C. S. Kelsay, A. W. Kinney, Y. T. Koudo, T. Mesdag, C. A. Morris, H. A. Moss, B. C. Olinger, M. A. Price, A. D. Remington, O. R. Reyburn, U. B. Shantz, B. E. Schoonmaker, H. B. Sook, R. C. Swinburn, D. I. Wadsworth, L. F. Walker, W. A. Walthew, E. H. White, A. L. Yates, E. C. McFarland, A. MacDougal, J. F. Drake, A. W. Lister.

WASHINGTON UNIVERSITY, DENTAL DEPARTMENT.

GRADUATES.

A. K. Adams, A. Bailey, G. W. Baldwin, F. J. Bartel, J. T. Biggs, W. H. Blanck, W. A. Bleke, E. P. Brady, E. O. Brewington, C. F. Caldwell, F. W. Carter, A. F. Dueber, H. E. Dowell, L. A. Ellenburg, H. R. Faherty, A. T. Gast, H. J. Green, T. F. Hafner, H. F. Hageman, J. D. Hayward, R. G. Heidinger, C. W. Hodges, F. W. T. Horstman, W. L. Hudson, G. Johns, C. W. Kennerly, J. F. Kimball, W. V. King, C. E. Knepp, E. D. Lambrechts, W. L. Lehmberg, W. Hays Lence, C. W. Lentz, J. M. Lonergan, L. H. Lotts, C. B. Mueller, F. A. Neuhooff, H. B. Owsley, A. G. Schieck, L. E. Scott, R. C. Seibert, E. E. Sharp, R. B. Shields, C. F. Seivert, W. S. Spencer, O. E. Spiller (M. D.), R. O. Steinman, T. J. Sugg, E. B. Trail, T. T. Umbarger, R. T. Villars, G. F. Watson, H. B. Weber, A. Westerfield, R. G. Williams, J. S. Wolff.

PITTSBURG DENTAL COLLEGE.

CLASS ROLL.

D. S. Ashcom, J. A. Allen, J. W. Anderton, C. E. Brinkman, F. G. Bender, G. F. Bayly, J. A. Boarts, C. O. Booth, J. H. Balsinger, J. C. Bingham, A. G. Copeland, H. Crawford, F. W. Cunningham, W. G. Cole, F. D. Couch, H. R. Craig, E. E. Cochran, M. G. Cratty, W. E. Davidson, F. H. Deterding, B. R. Davis, H. Eckley, W. J. Elliott, H. W. Ford, W. J. Greer, W. H. Gallagher, J. M. Jones, W. H. Kent, W. A. Kelly, P. Livingston, E. L. Leonard, H. D. Lyon, A. B. Linhart, C. O. Lee, J. A. Miller, E. G. Masters, G. G. Meyer, W. E. Mendel, F. R. Mellon, J. W. Miller, C. V.

McKelvey, J. McNaughton, I. C. McCue, C. S. McCord, M. O. Pisor, E. H. Park, C. M. Roland, H. S. Smith, F. E. Sanders, H. Seegman, O. A. Stewart, L. B. Simons, W. H. Stroup, J. B. Scott, E. F. Shaulis, C. S. Schumaker, P. R. Stone, R. C. Tannehill, G. C. Wehrle, S. S. Wells, A. I. Wise, H. J. Welch,

INDIANA DENTAL COLLEGE.

CLASS ROLL.

J. B. Blanks, A. G. Barrett, H. P. Brand, E. V. Bull, J. C. Canfield, J. M. R. Canfield, J. B. Carr, J. Cloyd, C. R. Cofield, C. S. Coppock, F. E. Cording, R. J. Coss, G. K. Croker, S. J. Cunningham, C. R. Davis, O. A. Day, P. G. Dixon, L. W. Downs, F. Earhart, F. Fay, T. Fullen, O. B. Galloway, R. G. Haas, D. Hacker, C. B. Hamilton, W. Harding, W. Hardwicke, F. W. Harrold, J. Hefeale, P. Hemsley, J. T. Hoppingarner, F. R. Houck, C. C. Howell, H. R. Hunter, G. Jackson, F. Kimberlin, W. R. Kirtley, T. F. Lewis, B. Mangold, H. H. Meier, H. Miller, W. Miller, H. L. Murphy, H. Myers, J. B. Needham, H. Parr, F. L. Patterson, F. I. Petterson, S. E. Ratcliffe, W. G. Rice, J. M. Richer, E. M. Risacher, G. W. Russell, J. C. Schermerhorn, S. E. Shoemaker, A. R. Shonkwiler, L. F. Smith, J. H. Sommers, O. E. Stiver, H. Stoddard, A. Timmis, J. E. Whitney, B. A. Widup, C. Will, S. Willey, H. M. Williams, W. L. Withers, G. E. Wright, H. M. Yaple, C. Yerza, J. O. Zubrod.

THE ST. LOUIS DENTAL COLLEGE.

(Formerly Marion-Sims Dental College.)

GRADUATES.

J. N. Barbee, E. F. Becker, E. F. Boewe, H. P. Bockrath, J. L. Borah, B. E. Broadus, T. H. Bryant, J. C. Burgess, T. R. Burk, G. Canterbury, L. K. Charles, F. M. Cole, J. E. Combe, M. B. Combs, H. R. Dahman, F. M. Dean, O. T. Dean, G. B. Donalson, E. A. Dulitz, W. Ernst, P. Finot, J. E. Frech Jr., W. C. Freivogel, O. Godshall, G. A. Græfe, W. B. Henderson, E. L. G. Heyne, A. R. Hofer, S. Kampe, F. K. Kayler, H. C. Kitchell, E. F. Koll, J. R. Lee, M. C. Lee, R. H. McCormick, A. G. MaGee, J. H. Maxwell, W. A. McKee, S. T. McMillin, H. E. Menkhau, W. J. Miller, F. X. J. Orlick, J. P. Pecau, L. C. Pitkin, A. Popp, J. Radomsky Jr., G. A. Ralston, C. Rederer, H. W. Reinhardt, J. A. Robinson, B. C. Roper, W. G. Ruckenbrod, D. F. Sadler, G. M. Saliba, W. P. Sanders, W. F. Shade, J. B. Schlund, C. W. Seagrave, W. R. Steffens, W. A. Shelton, E. B. Strange, W. Struble, G. H. Taggard, L. Tiemann, G. S. Van Wormer, E. A. Voigt, C. Yahlem.

OHIO COLLEGE OF DENTAL SURGERY.

GRADUATES.

C. A. Allen, A. H. Belt, W. G. Best, A. E. Bible, A. S. Blake, J. R. Bowen, F. O. Boston, F. R. Brown, J. F. Browne, E. O. Buchanan, W. W. Burdette, C. W. Burns, F. J. Bussy, D. E. Carey, H. M. Carey, C. A. Cavagna, G. W. Dancer, Mrs. C. B. Davies, A. A. Davis, O. D. Donaldson, P. P. Eshman, H. S. Espey, C. P. Fenner, V. W. Foster, H. C. Graham, J. J. Griffith, Mrs. F. N. Haag, S. F. Hamilton, O. O. Harper, H. G. Harshbarger, E. L. Henes, G. L. Hitler, W. S. Hoffman, L. P. Huddleston, F. H. Huff, H. C. Huffman, J. M. Hurlburt, C. P. Jenner, M. G. Kline, F. J. Knoll Jr., A. E. Lincicome, G. C. Littleton, H. F. Majowesky, H. Miller, O. M. Morrell, J. E. E. Morrison, W. Mount, C. A. Musgrave, J. A. Neill, H. C. Osborne, J. E. Potts, T. K. Province, S. P. Quisenberry, H. C. Rice, W. E. Robinson,

W. H. Rockwell, R. S. Rogers, E. D. Rush, C. A. Schaaf, S. M. Scott, S. F. Shakely, J. A. Sites, H. H. Smallridge, W. G. Smith, V. S. Taylor, E. V. M. Thompson, E. B. Tizzard, O. J. Towers, L. V. Voorhees, W. G. Wallace, W. W. Watts, I. M. Williams, H. B. Wilson, C. E. Wisecup, G. A. Withrow, C. D. Wright, P. H. Williams.

CHICAGO COLLEGE OF DENTAL SURGERY.

GRADUATES.

A. B. Ames, W. C. Appel, F. A. Axon, J. Bernhardt, I. E. Boyer, M. J. Bisco, R. P. Booth, A. A. Brecheisen, L. D. Barnum, R. M. Bromund, R. A. Barron, J. O. Brake, E. R. Butts, O. H. Budge, G. M. Burdick, R. H. Banks, G. D. Connell, T. M. Cannon, J. E. Cummings, A. D. Callum, E. H. Chappelle, J. H. Cardwell, J. S. Calderwood, J. J. Donelan, R. H. Daniels, H. E. Donahoe, C. A. Dickinson, J. G. Davies, J. A. Daniel, W. D. Dunlop (Pa. C.), A. Dimond, J. W. Dimond, D. C. Davenney, J. K. Day (L. D. S., R. C. S. E.), B. B. Devlin, L. R. Eller, L. E. Eaton, E. L. Eustice, F. E. Elliott, F. R. Eccles, T. F. Fossum, H. F. Flemming, L. R. Frace, G. E. Farley, F. W. Fuermann, P. S. Gardner, W. G. Gates, T. P. Gunning, J. Goldring, L. G. Gross, H. M. Glew, J. L. Godfrey, G. M. Gorrell, R. E. Hall, G. D. Hughes, E. J. Huston, J. F. Hohenadel, B. H. Harms, C. G. Hartley, K. F. Hausmann, C. B. Hostetler, G. A. Howatt, O. C. Hays, H. W. Hastings, G. R. Howe, H. C. Hendricks, H. E. Holbrook (B.S.), L. E. Haight, W. L. Hyde, R. E. Handley, J. E. Hoffman, O. E. Jelinek, E. V. Jones (B. S., Ph. G.), H. N. Jones, H. I. Kramer, C. R. Knight, E. Kelly, J. A. Kerrigan, L. A. Larson, E. L. Long, B. W. Linscott, W. F. Lubahn, R. R. Lappin, M. Levy, G. M. McMann, W. I. Macfarlane, A. W. Morris, J. A. Manning, C. B. Mead, L. W. Munger, E. B. Main, J. Mietus, J. M. McCullough, H. C. Mitchell, R. C. Matteson, F. G. Moore, D. W. McEwen, L. C. McDonald, E. F. Museum, S. E. Miller, M. L. McEvoy, D. J. McCartan, F. S. Morrell, W. R. McKinley, G. H. Newhouse, C. I. Nenahlo, G. B. New, E. E. Nussle Jr., H. G. Nelch, J. N. Novashelsky, F. C. Osgood, H. E. O'Neal, A. B. Patterson, W. T. Page, L. E. Phelps, F. J. Reiber, B. C. Ross, O. C. Rafter, P. P. Ravensborg, E. L. Ryan, W. V. Ryan (B. S.), C. R. Robinson, W. A. Roth (Ph. B.), A. G. Reardon, M. T. Richards, W. H. Reid, M. W. Sumner, L. D. Steele, A. D. Shaffer, P. M. Swinehart, G. V. Smith, F. A. Stewart, A. J. Scritsmier, J. O. Schoonmaker, J. L. Smith, R. B. Smith, R. P. Saunders, S. B. Shaeffer, H. W. Silvernale, S. J. Shaw, O. G. Specht, P. G. Stordock, E. L. Sawyer, C. M. Schwendener, W. F. Schatz, D. T. Thronson, G. B. Tovell, W. Thiersch, H. L. Trafford, H. L. Thorp, A. H. Tanner, H. F. Van Drezer, H. Van Doren, L. J. Viall, L. W. Viall, C. H. Willey, S. F. Webert, Y. E. Whitmore, H. C. Wands, C. C. West, W. E. West, O. P. Wiltz, H. R. Whitney, P. G. Wilson, O. C. Watson (L. D. S., D. D. S.), L. W. Yates, J. Q. Young, W. E. Young.

NORTHWESTERN UNIVERSITY DENTAL SCHOOL.

GRADUATING CLASS.

J. A. Adamson, S. A. Allen, G. B. Amiot, C. L. Beach, J. W. Beardslee, R. S. Bettis, E. J. Blass, A. H. A. Blome, J. H. Bowe, L. R. Dower, C. B. Boyington, C. E. Briggs, E. H. Briscoe, R. Bristow, J. L. Bronson, H. T. Brown, L. G. Brown, C. R. Buckley, F. D. Burns, W. R. Carrington, C. L. Cassell, O. E. Cassill, C. C. Chadwick, R. L. Clark, R. R. Clendenen, W. H. Colby, J. H. Collins, B. A. Conklin, A. Corey, S. Covalt, R. M. Crouse, E. L. Crume, J. J. Curran, J. W. Daly, D. H. Danek, E. J. H. Dffenbacher, R. V. Dillingham, F. L. Dixon, M. Dixon, J. J. Donovan, J. M. Downey, H. W. W. Duffel, C. S. Dunkle, L. S. Eastman, C. E. Ellis, J. M. Eveleth, H. M. Fay, A. F. Fellman, W. F. Fiebig, W. H. Fox, F. S. Fritz, J. J. Gatons, W. W. Gibson, P. O. Giles, T. E. Gilmore, H. L. Gowdy, J. C. Grant, F. G.

Gurley, H. H. Hamman, A. J. Harper, A. O. Haury, O. E. Heins, C. A. Hendrickson (D. V. M.), F. M. Higby, C. A. Hinckley, E. H. Hollem, W. K. Hull, L. E. Hutchinson, W. W. Irwin, B. Jackson, E. W. James, R. A. Jennings, O. J. Jensen, A. N. Johnson, H. V. Jones, J. R. Kagy, D. Kallander, R. Kallner, A. H. Kalman, W. T. Kane, C. W. Keppler, K. Kerch, F. C. Knecht, W. Kocher, W. W. Kohler, E. F. Kriebel, F. P. LaBounta, A. C. Lafount, H. C. Lambach, J. P. Lane, W. F. Larkin, D. G. Leckie, G. O. Lee, E. R. Leverton, O. Lohnbakken, A. V. Louderback (M. S.), G. G. Lowes, H. E. Lawry, G. B. Luetscher, L. A. Lupton, G. C. McCann, A. L. McCulloch, T. H. McCulloch, H. L. McDonald, T. H. McGovern, V. A. McGuigan, D. H. McKechney, A. A. McRae, L. M. Maas, P. F. Macdonald, W. J. Mahaffy, H. O. Mailer, L. E. Malkin, L. B. Manchester, W. T. Mann, C. L. Mason, G. H. Maxwell, O. L. Medsker, W. G. Meek, F. C. Mendenhall, M. I. Merritt, J. B. Miller, R. V. Mills, W. J. Moe, E. B. Monteith, F. A. B. Moore, V. Moore, W. G. Moore, J. F. Morrison, W. W. Muir, A. W. Murphy, W. L. Myer, W. G. Mylroie, G. A. Nelson Jr., J. J. O'Connell, M. M. O'Hara, O. J. Olafsson, J. W. Parker (B. S.), J. F. Parks, K. B. Paschal, J. W. Peroutky, A. C. Persinger, E. B. Phelps, L. A. Phillips, W. H. Plaxton, P. H. Plummer, H. J. Porter, H. K. Porter, O. C. Prideaux, W. G. Redmond, H. J. A. Renno, T. L. Rice (D. V. M.), D. H. Riley, H. S. Riley, I. H. Risinger, M. C. Roberts, W. R. Samson, W. E. Sargent, F. L. Sawyers, F. H. Schaarff, E. J. Schnadt, R. M. Schovel, L. W. Sherman, G. E. Siverling, F. W. Small, C. E. Smith, H. S. Smith, H. O. Smith, D. M. Somerville, J. E. Soukup, H. A. Sprague, W. Stark, N. L. Stenberg, W. H. Stenz, W. C. Stewart, H. S. Stimson, M. M. Stiner, C. A. Street, E. G. Swain, G. W. Taylor, A. H. Teitgen, G. H. Tellman, R. L. Thomas, G. C. Thorsness, T. D. Traveller, J. Trythall, C. M. Uglow, E. C. Unbehaun, T. H. Unland, O. C. Uttech, L. A. Viersen, T. J. Walsh, H. B. Washburn, C. K. Weaver, C. J. Webster, R. A. Weir, R. D. Wesley, A. West, F. V. West, C. E. Whiting, H. E. Wright, T. E. Williams, C. M. Willson, C. R. Woodworth, W. J. Wriglesworth, M. K. Wyman, E. W. Yackel.

The following have completed the course with credit, but for reasons of a technical nature, the degree can not be conferred at present:

H. S. Chinberg, W. N. Crawford, A. C. Crose, C. S. Omberg, J. T. Wilson (B. M.).

MEMORANDA.

MICHIGAN DENTAL ASSOCIATION.

The forty-ninth annual meeting of the Michigan Dental Association will be held at Detroit, July 10th, 11th and 12th. An unusually attractive program has been provided for and the entertainment features as arranged by the Detroit Dental Society are very complete. A. L. LEGR0, Secretary.

SOUTHERN WISCONSIN DENTAL ASSOCIATION.

Officers for the year: President, J. J. Wright, Milwaukee; first vice-president, C. F. Rodolf, Muscoda; second vice-president, J. H. Heidbrink, Union Grove; secretary, C. W. Collver, Clinton; treasurer, W. G. Hales, Mineral Point. Next place of meeting, Milwaukee.

GRADUATES OF THE KANSAS CITY DENTAL COLLEGE.

Will you kindly forward your address to me, so as to complete a roster of the graduates? Don't take it for granted that your address is known.

Yours,

J. P. Root,
Deardorff Bldg., Kansas City, Mo.

COMMITTEE ON CLINICAL CONFERENCE OF THE NEW JERSEY STATE DENTAL SOCIETY.

The New Jersey State Society extends this special request to any member of the profession having an abnormal or difficult case to present the same at the session of the society, to be held in the Auditorium, Asbury Park, New Jersey, July 21, 1905, at 3 p. m.

Cases may be presented, either by a clinic or before gentlemen from whom advice may be gained toward successful treatment.

It is hoped that the younger members of the profession will accept this as a special call to them and not refrain from presenting any perplexing cases upon which assistance is desired.

The chairman requests notice, as soon as possible, of the cases to be presented.

J. G. HALSEY, Chairman.

Swedesboro, N. J.

ILLINOIS STATE DENTAL SOCIETY.

At the annual meeting of the Illinois State Dental Society, held in Moline, Ill., May 9, 10 and 11, the following officers were elected for the ensuing year: President, S. Finley Duncan, Joliet; vice-president, L. W. Skidmore, Moline; secretary, Elgin MaWhinney, 34 Washington street, Chicago; treasurer, Charles P. Pruyn, Chicago; librarian, J. T. Cummins, Metropolis City; program committee, J. P. Buckley, Chicago; clinic committee, W. F. Whalen, Peoria; committee on science and literature, E. H. Allen, Freeport; committee on art and invention, C. E. Jones, Chicago; editor of transactions, Edmund Noyes, Chicago; members of executive council for three years, C. C. Corbett, Edwardsville, M. R. Harned, Rockford and A. D. Black, Chicago; local committee of arrangements, T. P. Donelan, Springfield, E. F. Hazell, Springfield and E. A. Kartack, Springfield. The next meeting will be held in Springfield May 8, 9, 10 and 11, 1906.

ELGIN MAWHINNEY, *Secretary*.

The forty-third annual meeting of the Iowa State Dental Society was held at Des Moines May 2, 3 and 4, 1905.

A special feature of this meeting was the organization of the society into "Special Study Clubs." The thought and plan was worked out and presented to the society in the president's annual address.

Six clubs were formed, which will take up work along their respective lines as follows: Inlay Club, Metal Filling Club, Crown and Bridge Club, Orthodontia Club, Prosthodontia Club, and Pathological Study Club.

The officers elected for the ensuing year are: President, C. M. Work, Ottumwa; vice-president, F. B. James, Wilton Junction; secretary, C. W. Bruner, Waterloo; treasurer, Mae Reynard, Osceola; superintendent of clinic, J. B. Pherrin, Central City. Executive committee: W. R. Clack, Clear Lake; J. B. Monfort, Fairfield; J. V. Konzett, Dubuque. Executive council: William Finn, Cedar Rapids; R. S. Baudy, Tipton; J. V. Konzett, Dubuque; F. M. Hunt, Des Moines.

C. W. BRUNER, *Secretary*,
Waterloo, Iowa.

NEW JERSEY STATE DENTAL SOCIETY.

The thirty-fourth annual session of the New Jersey State Dental Society will convene in the Auditorium, Asbury Park, N. J., at 10 a. m., Wednesday, July 21st, and continue in session Thursday and Friday. Asbury Park is one of the great Atlantic Coast watering places, contiguous to New York and Philadelphia. The Auditorium will hold 3,000 people and is open on every side. Fifty clinics will be given by men from North, South, East and West most eminent in their profession and will include the newest advances in all that pertains to operative and mechanical dentistry. In the exhibits the society feels that the latest and largest number of adjuncts to the successful practice of modern dentistry will repay a visit and inspection. The essays will consist of five already accepted and the best obtainable.

The social members and the visiting friends will be, as usual, provided for, and on Thursday evening at 10:30 a smoker will be provided. The Columbia Hotel will be headquarters with rates of \$2.50 to \$3.00 per day. Those desiring rooms must send in notice by July 1st. The program, as usual, will be replete with information.

CHARLES A. MEEKER, D. D. S., Secretary,
29 Fulton Street, Newark, N. J.

PATENTS OF INTEREST TO DENTISTS, RECENTLY GRANTED.

787350—Shaft attachment for dental motors. William B. and E. P. Alford, Sumter, S. C.

787,826—Dental flask. George L. Bruce, Baltimore, Md.

787352—Artificial tooth. Colin T. Campbell, Kentville, Canada.

787,584—Dental furnace. Arthur E. Matteson, Chicago, Ill.

787,861—Apparatus for straightening teeth. Willard B. Shelp, St. Louis.

788,398—Extracting tool. John B. Fladby, Rutland, N. D.

788,981—Dental disk-shield. William F. Green, Modesto, Cal.

788,490—Apparatus for swaging dental plates. Carl L. Nelson, Seattle, Wash.

787,937—Operative dental instrument. Frederick L. Norton, Bath, Maine.

787,947—Dental pliers for shaping clasps and half-collar crowns. Rod-
erick M. Sanger, East Orange, N. J.

788,906—Excavating bur for dentists. Willy Homann, Dusseldorf,
Germany.

788,909—Dental scraper. James W. Ivory, Philadelphia, Pa.

789,032—Centering device for flask patterns. George W. Jones, Gate
City, Ala.

788,947—Device for removing obstructions from between the teeth.
Charles F. Roth, Chicago, Ill.

789,591—Dental appliance. Freeman Davis, Moulton, Iowa.

789,415—Dental device. Henry G. Dressel, Chicago, Ill.

789,161—Dental electrode for medicamental diffusion. Samuel H. Linn,
Rochester, N. Y.

789,908—Dental cup. William Hare, Augusta, Ill.

790,207—Dental bracket. Gustav Holtz, Gouldsboro, Pa.

Copies of above patents may be obtained for ten cents each by address-
ing John A. Saul, solicitor of patents, Fendall building, Washington, D. C.

CLINIC SECTION OF THE NATIONAL DENTAL ASSOCIATION.

The work of the Clinic Section is progressing most favorably. Every-
thing at present indicates that the operative clinic will be the largest that

the National Dental Association has ever held. There will be forty operators for both mornings upon which the clinics will be held. The territory from Maine to Utah and from Minnesota to Texas has been fully covered, and men from almost all of the States in the section named have signified their willingness to be present and operate. The majority of the men of the G. V. Black Dental Club will be present and will operate upon both days. Such well known Northwestern men as Drs. Searl, Lewis, Clack, Conzett, Beemer, G. D. Moyer, W. H. K. Moyer, W. D. James, F. S. James, Gallagher, Carlson, Fawcett, etc., will once more operate in a body, as was done at the International Dental Congress.

Dr. T. W. Brophy, of Chicago, has kindly consented to assist and will make a surgical operation. Dr. Brophy's clinics are of such a high order that those interested are certain of seeing something which they will not soon forget.

The well known Dr. M. E. Smith, of Lynn, Mass., will also make a surgical operation.

Somnoform and Narcotile will be fully demonstrated.

A large number of gentlemen will give table clinics.

At the present writing I feel confident in saying that the best men in the profession will operate at Buffalo on July 26th and 27th. A full report has not been received from all the men on the committee, but sufficient data are before me upon which to base the opinion above expressed.

The program will appear in the July dental journals.

E. K. WEDELSTAEDT, Secretary Clinic Section,
New York Life Building, St. Paul, Minn.

LEWIS AND CLARK DENTAL CONGRESS.

In addition to the round trip rates, which have been quoted heretofore, of \$56.50 from Chicago and \$45.00 from Missouri River points, there has been *an additional reduction* made in the fares *east of Chicago*, so that the present rate from points on the Atlantic Coast to the Pacific Coast and return are *less than one-half* of the regular fare. This new reduction in rates should have a marked effect upon the attendance at the Congress by men of the Atlantic and Eastern States. These round trip tickets are good for ninety days for the round trip and allow choice of any routes from and returning to starting point.

HISTORY OF THE CONGRESS.

The Lewis and Clark Dental Congress, to be held in Portland, Ore., July 17, 18, 19 and 20, of this year, is organized by having a general committee composed of representatives from the State and local societies of Oregon, Washington, California, Montana, Idaho, Utah, Nevada, and the provinces of British Columbia.

The Congress originated with the State societies of Oregon and Washington, which appointed their representatives for this general committee at their last annual meetings, respectively. At the close of the Oregon meeting, held in 1904, the joint representatives from that State and from Washington met in Portland and formed a temporary organization of the general committee, designating the time and place for the meeting and electing Dr. Norris R. Cox chairman, and Dr. Arthur W. Chance secretary, both of Portland.

At this meeting it was ordered that correspondence be entered into with societies of the other States in the territory, embraced in the scope of the Lewis and Clark Centennial, to determine if the holding of the Congress in

Portland would meet with their approval and co-operation. As a result of this correspondence, the general committee as now composed was formed and a meeting of the entire committee was held on December 29, 1904, when permanent organization was perfected, by-laws adopted, an executive committee of five elected, and the officers of the temporary organization made the permanent officers of the committee.

The authority of officers and committees will terminate at the convening of the Congress and will be replaced by a president, as many vice-presidents as may be determined by the members, a secretary and a treasurer, who will be elected at the opening session of the Congress, and will constitute its permanent officers.

In the by-laws power was given the executive committee to make appointments of all subordinate committees. At the meeting held on December 29, there was appointed a committee on clinics, one on essays, and one on exhibits. The committee on clinics being selected at the suggestion and with the advice of the general committee from all the States embraced in the Congress at that time.

In the by-laws the membership fee was fixed at \$5.00 and memberships were limited to no locality, but were open to dentists throughout the world. Memberships in the Congress, for each State, are left entirely in the hands of a general committee of that State. For those living in the States east of the ones represented on the general committee, and those living in foreign countries, there have been appointed membership committees in many other States in the Union, who will receive applications.

The various committees have been working energetically, each in its different line, and the local committee of arrangements has secured the armory of the Oregon National Guard as a meeting place for the Congress. In this building will be held the meetings of the American Medical Association, which holds its annual session in Portland the week preceding that of the Lewis and Clark Dental Congress. The building will be fitted up with every accommodation for clinics, exhibits and essays, namely: Electric wiring, gas, water, tables for demonstrators, chairs, electric engines, and other conveniences. The exhibit and clinic hall in this building will have an area of 20,000 square feet. The hall for business meetings and the reading of essays and discussions will seat between 1,000 and 1,500 people, is well lighted and conveniently arranged for the use of a lantern in illustrating papers.

The committee on essays has secured a large number of valuable and original papers, some of which will be given by men of international reputation. This part of the program will be highly instructive and interesting.

The committee on clinics has already secured from all parts of the United States clinics by seventy-five operators, and there is no question that by the time of the opening of the Congress the number of clinics will be increased to 150 or 200.

The committee on exhibits has secured the co-operation of the leading manufacturers of dental goods in the United States, most of whom have definitely signed contracts to exhibit at the Congress. The manufacturers will have, in addition to their exhibits, demonstrators of repute to exploit their various new appliances and methods of practice.

Memberships in the Congress are being taken rapidly, especially in the territory west of the Rocky Mountains, while interest in the Congress among men of Eastern States is by no means small. It is confidently believed that there will be an attendance on the Lewis and Clark Dental Congress a membership of at least 1,000. All who join the Congress and pay the membership fee will be entitled to a bound copy of the proceedings, which will be mailed to them free of cost.

The program up to April 15th includes the following for essays: Burton Lee Thorpe, St. Louis, Mo.; Julius Endleman, Philadelphia, Pa.; J. C. Hennessy, Reno, Nev.; Ray D. Robinson, Los Angeles, Cal.; William Bebb, Los Angeles, Cal.; H. J. Judurz, New York City; N. L. Rhein, New York City; C. V. Vinges, New Orleans, La.; John S. Marshall, Presidio, Cal.; C. N. Thompson, Chicago, Ill.; Eugene S. Talbot, Chicago, Ill.; Crittenden Van Wyck, Oakland, Cal.; Clyde Payne, San Francisco, Cal.; G. V. I. Brown, Milwaukee, Wis.; C. N. Johnson, Chicago, Ill.; B. S. Scott, Tacoma, Wash.; J. M. Meyer, Tacoma, Wash.

The following for clinics: C. N. Johnson, Chicago, Ill.; Crittenden Van Wyck, San Francisco, Cal.; C. N. Thompson, Chicago, Ill.; G. W. Schwartz, Chicago, Ill.; C. L. Rose, Fargo, N. D.; J. H. Merritt, Oakland, Cal.; A. M. MaGee, Louisiana, Mo.; W. V. B. Ames, Chicago, Ill.; M. L. Rhein, New York City; LeLan O. Green, Chicago, Ill.; Porcelain Club (seven in number), Los Angeles, Cal.; Portland Porcelain Club (six in number), Portland, Ore.; J. L. Pease, Oakland, Cal.; G. A. Rawlings, Bismarck, N. D.; John S. Marshall, United States Army, Presidio, Cal.; J. J. McLaughlin, North Adams, Mass.; E. R. Tait, Oakland, Cal.; J. W. Nebett, Presidio, Cal.; G. E. Longeway, Great Falls, Mont.; E. B. Edgers, Seattle, Wash.; H. C. Miller, Portland, Ore.; L. P. Haskell, Chicago, Ill.; F. W. Hergert, Seattle, Wash.; O. J. Smith, St. Louis, Mo.; C. A. Louthwell, Boise, Idaho; G. N. Wasser, Cleveland, Ohio; R. B. Gentle, New York City; V. H. Frederick, St. Louis, Mo.; Russel Hill, Hamilton, Mo.; W. F. Lawerenz, St. Louis, Mo.; E. W. Dodez, Ft. Wayne, Ind.; G. V. I. Brown, Milwaukee, Wis.; P. M. Wuillemin, San Francisco, Cal.; E. B. Reynolds, Seattle, Wash.; J. S. Engs, Oakland, Cal.; A. J. Holmes, New Westminster, B. C.; J. S. Baldrige, Wooley, Wash.; Alice M. Steeves, Boston, Mass.; H. J. Smith, Genesee, Idaho; H. W. Bates, Denver, Colo.; R. D. Robinson, Los Angeles, Cal.; F. L. Platt, San Francisco, Cal.; W. J. Hacking, New Westminster, B. C.; G. A. Louque, New Orleans, La.; M. E. Grossman, Honolulu, H. I.; William Finn, Cedar Rapids, Iowa; T. K. Ledyard, San Jose, Cal.

The exhibits are partially represented as follows: S. S. White Dental Manufacturing Company, Ritter Dental Manufacturing Company, H. D. Justi & Son, Gideon Sibley, Klewe & Co., J. W. Edwards Company, W. V. B. Ames, J. W. Ivory, Detroit Dental Manufacturing Company, Dr. X. Dodel, Edw. Rowan, Keasby & Mattison Company, Hisey Dental Specialty Company, The American Cabinet Company, Ransom & Randolph Company, Lambert Pharmacal Company, Armour & Co., Kress & Owen Company, E. deTrey & Son, Harvard Dental Manufacturing Company, A. C. Clark & Co., J. M. Ney & Co., Dentists' Supply Company, Electro-Dental Manufacturing Company, Cleveland Dental Manufacturing Company, Horlick's Malted Milk Company, Oakland Chemical Company, J. T. Milliken Company, Hall & Ruckel, Victor Manufacturing Company, Boston Pharmacal Company, Velvo Dental Specialty Company, Dr. I. C. Graft.

ARTHUR W. CHANCE, Secretary.

AN ACT TO REGULATE THE PRACTICE OF DENTAL SURGERY AND DENTISTRY
IN THE STATE OF ILLINOIS AND TO REPEAL AN ACT THEREIN NAMED.

INTRODUCED BY SENATOR A. C. CLARK.

SECTION 1. *Be it enacted by the People of the State of Illinois represented in the General Assembly:* That a Board of Examiners, to consist of five practicing dentists, to be known as the Illinois State Board of Dental Examiners, is hereby created, whose duty it shall be to carry out the purposes and enforce the provisions of this act, as hereinafter specified. The

members of said board shall be appointed by the Governor, and at the time of their appointment upon said board must be actual residents of the State and must have been, for a period of five years or more, legally licensed to practice dentistry or dental surgery in this State: *Provided, however*, that no person shall be eligible to appointment to said board who is in any way connected with or interested in any dental college or dental department of any institution of learning. The term for which the members of said board shall hold office shall be five years: *Provided*, that the members of the dental board, in office at the time of the passage of this act, shall be permitted to serve out their respective terms of office for which they were appointed, and until their successors shall be duly appointed. In case of a vacancy occurring on said board, such vacancy shall be filled by the Governor, as herein provided.

SECTION 2. Said board shall choose one of its members president and one secretary thereof, and it shall meet at least once in each year, and oftener, if necessary, in the discretion of the board, and at such time and places as it may deem proper. A majority of the members of said board shall, at all times, constitute a quorum, for the transaction of the business of the board, and the proceedings thereof shall, at all reasonable times, be open to public inspection.

SECTION 3. No person, unless previously registered or licensed to practice dentistry in this State at the time this act shall become operative, shall begin the practice of dentistry or dental surgery, or any branches thereof, without first applying for and obtaining a license for such purpose from the Illinois State Board of Dental Examiners. Application shall be made to said board in writing, and shall, in every instance, be accompanied by the examination fee of twenty dollars (\$20), together with satisfactory proof that the applicant is of good moral character and twenty-one years of age or over at the time of making the application. Application from a candidate who desires to secure a license from said board to practice dentistry or dental surgery in this State shall be accompanied by satisfactory proof that the applicant so applying for a license has been engaged in the actual, legal and lawful practice of dentistry or dental surgery in some other State or country for five consecutive years just prior to application; or is a graduate of and has a diploma from the faculty of a reputable dental college, school or dental department of a reputable university; or is a graduate of and has a diploma from the faculty of a reputable medical college or medical department of a reputable university, and possesses the necessary qualifications prescribed by the board. When such application and the accompanying proofs are found satisfactory, the board shall notify the applicant to appear before it for examination at a time and place to be fixed by the board. Examination may be made in whole or in part, orally or in writing, at the discretion of the board, and shall be of a character as to test the qualification of the applicant to practice dentistry or dental surgery. All examinations provided for in this act shall be conducted by the board, which shall provide for a fair and wholly impartial method.

SECTION 4. Said board of dental examiners shall make rules or regulations to establish a uniform and reasonable standard of educational requirements to be observed by dental schools, colleges or dental departments of universities, and said board may determine the reputability of those by reference to their compliance with said rules or regulations.

SECTION 5. Any person shall be regarded as practicing dentistry or dental surgery within the meaning of this act, who shall treat or profess to treat any of the diseases or lesions of human teeth or jaws or extract teeth, or shall prepare and fill cavities in human teeth or correct the malposition of teeth or supply artificial teeth as a substitute for natural teeth; *Provided*, that noth-

ing in this act shall be so construed as to prevent regularly licensed physicians or surgeons from extracting teeth. Further, this act shall not prevent students from performing dental operations under the supervision of competent instructors within a dental school, college or dental department of a university recognized as reputable by the Illinois State Board of Dental Examiners.

SECTION 6. Any person licensed to practice dentistry or dental surgery in this State by the Illinois State Board of Dental Examiners, as herein-before provided, shall personally, and within ninety days from date of issue, cause such license to be registered with the county clerk of such county or counties in which such person desires to engage in the practice of dentistry or dental surgery, and the county clerks of the several counties of this State shall charge for registering such license a fee of twenty-five cents (\$0.25) for each registration. And it is hereby provided further that any person who engages in the practice of dentistry or dental surgery in this State shall cause his or her license to be registered with the county clerk before beginning the practice of dentistry in said county, and to be at all times displayed in a conspicuous place in his or her office wherein he or she shall practice such profession, and shall further, whenever requested, exhibit such license to any of the members of the said board or its authorized agent.

SECTION 7. The board may refuse to issue the license provided for in this act, or may revoke such license if issued to individuals who have, by false or fraudulent representations, obtained or sought to obtain practice, or by false or fraudulent representations obtained or sought to obtain money or any other thing of value, or have practiced under names other than their own, or for any other dishonorable conduct. The board, when written charges have been filed with its secretary and seem sustained by proof, shall fix a time and place for the examination of a person so charged and shall give written notice to the said person of the time and place and furnish him with a copy of the charges at least twenty days prior to the date fixed for the examination.

SECTION 8. Any failure, neglect or refusal on the part of any person obtaining a license to practice dentistry or dental surgery from the said board to register such license with the county clerk of some county in this State, as above directed, within ninety days from the date of issue of the same, shall work a forfeiture of such license, and no license, when once forfeited, shall be restored except upon payment to the said board of the sum of fifteen dollars (\$15) for such neglect, failure or refusal to register such license and the surrender of forfeited license.

SECTION 9. In order to provide the means for carrying out and enforcing the provisions of this act, the said board shall charge each person applying to it for examination for a license to practice dentistry or dental surgery in this State an examination fee of twenty dollars (\$20), and in addition thereto a license fee of five dollars (\$5.00), for every license or duplicate issued by said board, and out of the funds coming into the possession of the board under the provisions of this act the members of the said board shall each receive as compensation the sum of ten dollars (\$10) for each day actually engaged in the duties of the office and all legitimate and necessary expense incurred in attending the meetings of the said board; *Provided* that the secretary of the board, for the purpose of enforcing the provisions of this act, shall receive a salary to be fixed by the board, instead of the per diem of ten dollars (\$10). All expenses shall be paid from the fees, fines and penalties received and recovered by the board under the provisions of this act; *Provided* that no part of said expense shall be paid out of the State treasury. All moneys received in excess of said per diem allowance and other expenses herein provided shall be held by the secretary of the said board as a special fund for meeting expenses of said board, and said

board shall make an annual report of its proceedings to the governor on the 15th day of December of each year, together with an account of all moneys received and disbursed by them pursuant to this act.

SECTION 10. Any person filing or attempting to file as his own the diploma or license of another, or a forged affidavit or identification or qualification, shall be deemed guilty of a felony, and upon conviction thereof shall be subject to such fine and imprisonment as is made and provided by the statutes of this State for the crime of forgery.

SECTION 11. Any person who shall practice dentistry in this State without being registered or without a license for that purpose, or violates any of the provisions of this act, shall be subject to prosecution before any court of competent jurisdiction upon complaint, information or indictment, and shall, upon conviction, be fined for each offense in any sum not less than fifty dollars (\$50) nor more than two hundred dollars (\$200). All fines imposed and collected under this act shall be paid to the Illinois State Board of Dental Examiners for its use.

SECTION 12. All licenses issued by the said board shall be signed by all of the members thereof and be attested by its president and secretary.

SECTION 13. An act to insure the better education of practitioners of dental surgery and to regulate the practice of dentistry in the State of Illinois, approved May 30, 1881, and in force July 1, 1881, and all other acts and parts of acts amendatory thereto, and hereby repealed; *Provided*, however, that such repeal shall in no wise affect any suit, prosecution or court proceeding pending at the date of the passage of this act.

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THE CHICAGO EROSION MUDDLE.

BY EDWARD C. KIRK, D. D. S., SC. D., PHILADELPHIA, PA.

The Chicago Dental Society has undertaken, through the agency of a special committee appointed for that purpose, to solve the problem of the etiology of erosion of the teeth and a preliminary report of the committee is placed before the dental profession in THE DENTAL REVIEW of April 15th. The report fills nearly thirty-five pages so that from the single feature of literary bulk it can not fail to command attention, yet when one comes to read it carefully and to digest the findings of the committee as therein recorded one is left in doubt as to whether it is really meant to be a serious contribution made in the hope of adding something important to our knowledge of the subject under consideration. Viewed from any standpoint the report is far from satisfying, and it contains so many and demonstrable evidences of fundamental incompetency upon the part of the committee to properly deal with the subject, that it becomes a duty to examine into this work and in the interests of truth point out the evident errors of their method and of their results.

The report may be divided for the purposes of study into two sections, first a section consisting of twenty-one pages made up of abstracts of the opinions of various writers on the subject under consideration, and, second, an effort on the part of the committee to discredit the findings of the writer on a phase of this question as published in the *Items of Interest*, Vol. XXIV, 1902, p. 511, under the title, "The Clinical and Chemical Study of a Case of Dental Erosion."

The first section of the report, with two or three exceptions, does not contain any reference to any scientific study of erosion

other than what evidence has been gleaned from clinical observation. No reference is made to the observations of James Truman with respect to the acidity of the oral secretions in erosion cases when the salivary flow is in abeyance during sleep (*Dental Cosmos*, Vol. XXVI, p. 230), nor is reference made to the experiments of the writer by which the source of the acidity was determined and the means by which it could be localized were made known in a paper read before the First District Dental Society of the State of New York under the title, "A Contribution to the Etiology of Erosion," and published in the *Dental Cosmos*, Vol. XXIX, 1887, p. 50. This method is credited by the committee to another writer, Dr. Lewis A. Obrian, who referred to it in a paper on Erosion published two years later in the *Dental Cosmos*. These facts we think should have been brought out by the committee if their report is to be received as an unbiased and accurate exhibit of what is known on the question of erosion.

With the exception of Znamensky, Black and Underwood no author quoted by the committee bases his views as to the etiology of erosion upon any attempt at experimental proof, the opinions in all other cases being based upon clinical observation and in the present state of scientific knowledge the evidence of clinical observation can not be taken as proof unless and until supported by the confirmatory evidence furnished by accepted methods of exact scientific observation and research.

The first section, therefore, of the committee's report is an exhibit of what a respectable group of men think about erosion. The second section is an exhibit of what the committee doesn't know about erosion but as they themselves entitle it a "Partial Report," it is doubtless only part of what they do not know about the subject.

The *raison d'être* of the second section of the report to which approximately thirteen or fourteen pages are devoted is stated by the committee as follows: "The latest theory and one of the few besides that of Drs. Black and Michaels, which appeared to be based upon scientific facts was presented to the profession by Dr. Edward C. Kirk, of Philadelphia, before the Second District Dental Society of New York, and published in the *Items of Interest*, July, 1902. It

seemed our duty, therefore, to try and substantiate or disprove this theory and, if possible, to discover the true cause of the malady."

"With this end in view," the report states, "we met for work on the third Friday evening of October, 1903, at the College of Dentistry, University of Illinois, and began a series of experiments which were continued every Friday evening, with the exception of two, during the holidays, until the second Friday in April, 1904. We purchased a polariscopic attachment for the microscope and such other apparatus as was needed, besides using the apparatus to which we had access belonging to the college." What was done by the committee in the twenty odd Friday evenings with this outfit of apparatus is recorded in the second section of the report. First, "the saliva and urine of each member of the committee was examined polariscopically and compared before taking up cases of marked erosion," with the result that "specimens of saliva taken from the mouths of each and placed under the micro-polariscope gave fields with similar crystals, while others differed entirely. In most instances, however, the crystals had the same characteristics."

From which we conclude that the saliva of the committee is not of uniform composition with respect to the different individuals nor in the same individual at different times, a belief generally held regarding saliva in general and supported by other known facts bearing upon the phenomena of nutrition and secretion to such a degree as scarcely to need the additional evidence furnished by the committee to confirm it.

Next in order the committee took up the examination of saliva and urine from erosion cases, submitting "at least twelve slides each evening to examination." In connection with this work they "made and examined many salts for comparative study. Among the number thus examined were crystals of calcium lacto-phosphate. This was prepared by treating calcium phosphate with lactic acid." And this is the way the committee did it. Calcium phosphate was treated with lactic acid and "after the reaction had taken place, it was diluted with distilled water, boiled, filtered and set aside to crystallize for one week, at the end of which time crystals were formed in the syrupy mass, showing an excess of acid used. Upon placing some of these crystals under the lens a tendency to the sheath-like [sic]

appearance was noticed; but nothing resembling Fig. 7 in Dr. Kirk's article, *Items*, p. 521. In no instance were we able to duplicate Dr. Kirk's Fig. 7, from crystals of calcium lacto-phosphate nor did we find any crystals in the specimens taken from the mouths of patients, whose teeth were affected by either local or general erosion resembling the specimen which Dr. Kirk published as calcium lacto-phosphate, and which he believed was formed in the mouths of patients whose teeth were affected by general erosion as the result of lactic acid dissolving the calcium phosphate of the teeth, and upon which he based his theory that all cases of general erosion are caused by lactic acid which is formed by fermentation in the mouth."

The paragraph quoted contains two points which demand attention. First, the method by which the attempt to reproduce the writer's specimen of calcium lacto-phosphate was made; second, the perversion of the writer's statement respecting the causation of general erosion by attributing to him the authorship of a hypothesis which is of the committee's own constructing.

As to the first point, "calcium phosphate was acted upon by lactic acid, diluted, boiled, filtered and set aside for one week to crystallize at the end of which time crystals were formed in a syrupy mass showing an excess of acid used." That was a mistake and it did not show that an excess of acid had been used but does show that the committee did not know that lactic acid can not be neutralized by calcium phosphate; indeed it is quite questionable whether there is such a compound as calcium lacto-phosphate at all; the most that we do know is that calcium phosphate is soluble as such in lactic acid, as it is in several other weak acids, even carbonic, without decomposition. The solution should not have been boiled, as boiling may, and in fact does, easily bring about decomposition or modification of composition in salts of many of the organic acids, and besides a consistent technique would have required that the saliva should also have been boiled in order that a uniform basis of comparison be maintained throughout the comparative study of the saliva specimens and the control specimens of artificially prepared salts respectively.

The crystallizations for study should have been made upon microscopic slides under a coverglass, but from the committee's report it

would seem that the crystallizations were made in the original body of solution, as the report contains no intimation whatever that the crystals were otherwise made. If the technique is properly carried out there is no reason why the writer's Fig. No. 7, which seems to be the rock that the committee split upon, can not be repeated indefinitely. It can be done in Philadelphia as many times as the committee may desire to see it done, or it can be done in Chicago if one knows how, and it is one of the routine demonstrations in the teaching of the subject of erosion.

The committee refers to the "sheath-like" appearance of the crystals. The writer likened the appearance to that of a sheaf of wheat. That is what it is termed in this locality, and if in the Cook County environment the habit is to speak of a sheath of wheat, we were not informed thereof and beg to be excused for our ignorance.

As to the second point in the paragraph under consideration: The writer is charged with being the author of a theory "that all cases of general erosion are caused by lactic acid which is formed by fermentation in the mouth." What the writer did say is as follows: "The determination of the solvent in this case and the general nature of the disorder, affecting as it does all of the teeth, would seem to make it necessary to divide our erosion cases into two classes: those in which the erosion is general, in which all of the surfaces of the teeth are uniformly involved, in which lactic acid is the solvent acid; and the other class, which is distinctly due to the exudate from an abnormal buccal gland or glands, the acidity of which is due to one of two things—the acid sodium phosphate or the acid calcium phosphate." A straightforward reading of the foregoing statement will not warrant the distortion of its meaning into an assertion that all cases of general erosion are due to the action of lactic acid produced by fermentation in the mouth.

The report as published in the DENTAL REVIEW is accompanied with fourteen illustrations, of which the last three are reproductions of those made by the writer and published in the *Items of Interest* in the article which the Chicago committee has undertaken to verify or to disprove as to its conclusions. Deducting these three it leaves eleven illustrations presumably original with the committee. The inscription under three of them states "taken from Boston," from

what part of Boston is not stated and we are also left in doubt as to one important item in that no intimation is furnished as to whether the particular part of that great and important municipality from which the specimens figured were taken, was or was not suffering from erosion at the time. As all of the Boston specimens are of substances generally found in the urine, they leave us reasonably certain upon one point, namely, that they were not salivary in origin.

Of the remaining eight illustrations original with the committee two are of aluminium sulphate artificially made and evidently introduced by the committee to show that there are other chemical compounds which under the microscope look like the crystals found by the writer in the erosion case reported by him in the *Items of Interest* and which paper has commanded so much of the Friday evening attention of the committee. The writer has elsewhere dealt with the question of the similarity of chemical compounds in the crystalline state as viewed under the micro-polariscope (vide *Dental Cosmos*, March, 1905) and it is therefore unnecessary to go at length into that aspect of the question here; suffice it to say, however, that while it is true that many compounds present similar appearances under the micro-polariscope it is also equally true that the limited number of compounds found in the saliva do not; and furthermore there are many compounds which in the very nature of the case are excluded from consideration in a micro-chemical study of the saliva and aluminium sulphate is most assuredly one of them. The remaining six illustrations original with the committee are all examples of the same salt, namely, the di-sodium hydrogen phosphate, which is common to all normal saliva or at least to the saliva of all persons in fairly normal health, it is to this salt that the alkalinity of the normal saliva is mainly due. The illustrations naturally show some variation of arrangement as all crystal preparations must, but the general characteristics of the six specimens illustrated by the committee and here under consideration are so uniform as to leave no doubt even in the mind of the untrained observer that they represent the same compound. This is further borne out by the persistency with which the axial relations of the crystalline deposit are maintained in all of the six illustrations under consideration. It is regrettable that the committee failed to number the illustrations so that they could be specifically designated, but reference is here made

to the two illustrations upon page 318, the upper one on page 319, that on page 322, on page 324 and page 325, of the DENTAL REVIEW article.

But the committee complain that they were unable to see anything else in the specimens examined other than what they have shown in these illustrations, and especially that they were unable to find the forms described by the writer. The publication of their



Crystal Taken From Erosin. No Other Forms Present.

Fig. I. One of the committee's eight illustrations of saliva crystals made from a photograph by ordinary light.

illustrations has afforded at least one good reason why they were unable to see a calcium lacto-phosphate crystal and possibly a very considerable number of other crystals in the specimens illustrated, provided of course that other compounds did exist, and that reason is clearly supplied by the illustrations themselves. *They are not polariscopic images at all but simple photomicrographs under low magnification taken with ordinary light which has not been polarized in the slightest degree.* Proof of this assertion is furnished absolutely

by the fact that the crystal images shown in the report are formed by dark lines upon a light background, whereas in a polariscopic image the only light that reaches the eye or the ground glass of the camera as the case may be, is transmitted by the crystal itself; it is this property of being able to diffract a polarized ray of light so that it can emerge from the analyzing Nicol prism that makes the crystal visible in the polariscope. The dark or opaque background is an essential feature of a polariscopic picture and the absence of it is proof positive that the picture is not one taken through the polariscope. The foisting of a pictorial record of such manifestly ques-



Fig. II. The writer's illustration of artificially prepared calcium lactophosphate, photograph made by polarized light. The difference in the kind of illumination is shown by the backgrounds of the crystals in the two illustrations, respectively.

tionable character into a report professing to scientifically determine the value of the polariscope in the study of the saliva or to determine the value of the scientific results already obtained by that instrument, is either a case of gross carelessness or ignorance, or worse, for while it will not for a moment mislead those who are familiar with the polariscope or its possibilities, yet it is calculated to arouse doubt in the minds of those not familiar with the subject as to the validity of certain findings that have already thrown much light upon the etiology of erosion and upon the value of the microscope

as well in its well known and accepted use as a means of diagnosis. The difference between an image made by the polariscope and one made by ordinary light is well and definitely shown by comparison of the illustrations original with the committee and those taken from the writer's paper on erosion which appear together in the committee's report, one each of which is here reproduced.

If the committee has used a polariscope at all in this work no tangible evidence of it appears in the report.

The committee calls attention to the fact that the crystallization of chemical compounds is modified by contact with colloids in the same solution, a well known fact pointed out in 1858 by Mr. Rainey in his classic study of calcification and since corroborated by many other observers. It was the knowledge of the fundamental fact that colloidal substances exert a modifying effect upon crystal forms that led the writer to introduce the method of dialysis for the first time into the technique of salivary analysis as a means for separating the crystallizable substances from the colloids of the saliva in the study of the erosion case reported in *Items of Interest* in order that the resulting crystals might be studied in comparison with other compounds apart from the modifying effects which colloids such as mucin would produce upon them. The Chicago committee bring forward this old established and well known fact of colloidal modification as though it were a new or overlooked feature in connection with salivary micro-polarization. In view of the trite character of the suggestion it appears somewhat superfluous.

The several confessions of impotency which the committee makes are naive, to say the least, and in some instances pretty nearly pathetic, for example: "Dr. Kirk says in *Items of Interest*, page 516, July number, 1902, that lactic acid is doubtless the solvent agent in cases of general erosion and that acid sodium phosphate or acid calcium phosphate is doubtless the cause of local erosion." Dr. Kirk didn't say just that, but nevertheless the committee says, "On close examination and a comparative study the committee was at once confused as to how it would determine which of these solvents would be the cause of the destruction of tooth substance." We admit that it is a rather confusing problem yet with a little thinking and native ingenuity it can be solved like a great many

other questions that are confusing only because one doesn't know how to go about solving them.

Let the committee select a typical case of labial erosion of the incisors, satisfy themselves that the acid is exuding from the mucous glands of the lip by the method described in the writer's paper in *Dental Cosmos*, Vol. XXIX, 1887, page 50, i. e., the paper they didn't read, then wipe off the membrane of the under side of the lip and place in close contact with the surface a piece of asbestos cloth that has previously been treated as follows: First subjected to a high muffle heat to burn out all organic matter, then treated with hydrochloric acid followed by ammonia and then washed with distilled water, and again subjected to high muffle heat, by which treatment everything soluble or volatile is eliminated from the asbestos which will then be actively absorbent just as a biscuited mass of fireclay or porcelain is absorbent and it will adhere to the mucous membrane like the unglazed stem of a clay pipe. After twenty or thirty minutes' application of the prepared asbestos cloth over the orifices of the buccal mucous glands the cloth will have absorbed a sufficient quantity of mucus for examination. The soluble contents of the cloth are next extracted with distilled water, dialyzed and examined either under the microscope or by reagents when it will be found that the acidity is due to the presence of sodium dihydrogen phosphate.

The committee says, "Our experiments and observations have led us to believe that erosion is the result of a disturbed condition of the epithelial cells in certain localized areas of the gum tissue. Just what produces the disturbed condition of the cells we as yet have not determined." This is interesting, but it has been pretty well known since 1887 (again *vide* the Erosion paper they didn't read) and "just what produces the disturbed condition" has also been known for some time past and is a matter of record in our literature (*vide Dental Register*, Vol. LVII, p. 65, and *DENTAL REVIEW*, Vol. XVII, p. 390). Indeed the essential points in this conclusion have an extremely familiar appearance and seeing that they were presented by the writer in a paper before the Odontographic Society of Chicago in 1903 at its anniversary meeting in February of that

year this part of the committee's report savors somewhat of that kind of mental activity known as subconscious cerebration.

Again the committee says, "Michaels of France, and Kirk of the United States, (thanks, gentlemen), both *seem* (italics mine) to have taken up a line of micro-chemical analysis of the saliva. ("Seems, Madame, nay, is."—Hamlet's remark to his mother in a play by W. Shakespeare of England) and practically demonstrated to their own satisfaction that lactic acid must be the solvent of the tooth structure." Michaels did nothing of the sort, never suggested such a thing, knew nothing about the lactic acid matter until Kirk's *Items of Interest* paper, which has caused the committee so much hard labor, was published. That paper is the report of "The Clinical and Chemical Study of a Case of Dental Erosion." A case, he it remembered, not several or all cases, but *A* case. The teeth were generally eroded, many deeply decalcified, the microscopical and chemical study of the saliva showed abundance of calcium lactophosphate in the fluid. From these facts and the proven fact that tooth structure, i. e., enamel, dentine and cementum, are soluble in lactic acid the inference was naturally drawn and stated as a conclusion which the facts seemed to warrant, that erosion can be produced by lactic acid formed in the mouth. Not that all cases nor all general cases of erosion were so produced but a case which formed a new class was so produced and in that case the erosion was general. The evidence, including the specimens, was submitted in detail simultaneously to Drs. G. V. Black and W. D. Miller, who carefully examined the whole matter and went over the reasoning together in my library where the demonstration was made for the benefit of their opinion and they concurred in the conclusions reached.

The same evidence was submitted to the Second District Dental Society of New York at the time the paper was originally read. The images of the crystal forms were projected with the polariscope upon the screen for the inspection of the entire audience, not photomicrographs but projections from the actual specimens taken from the saliva of the patient described. The society was unanimous in its concurrence with the conclusions of the paper and the exhibit. The same specimens and many like them have been personally examined

by many teachers of dentistry and of medicine and by eminent scientists who have, after understanding the method of polariscopic study of the saliva, concurred in its validity as a scientific method.

What the committee needs is to become practically familiar with the elementary phases of the subject and be thus prepared to do intelligent work before making a report which to any one conversant with this department of research is a pitiable advertisement of the unfamiliarity of the committee with the character and technique of the work they have in hand.

The committee asks that it or "some other committee be placed in a position where it could prosecute for five years researches in this line which would result in some startling facts relative to certain lesions in the oral cavity." If something startling is the committee's objective point, the extension of time asked for is superfluous—it has produced something startling already.

I desire to correct a misunderstanding arising in the discussion of the report before the Chicago Dental Society, printed at page 355 of the same issue of the DENTAL REVIEW in which the report appears. Dr. G. V. Black makes some criticisms upon the mechanism of my polariscope, especially noting that it lacks a revolving stage. The only polariscope belonging to me which has been seen by Dr. Black is a projecting instrument used only for class demonstration. I have two other instruments used in salivary and urinary analysis. One has the graduated revolving stage and the other has not. Both are in use in my laboratory work. For ordinary qualitative work a revolving stage is unnecessary and is needed only for determining the angle or degree of polarization. Ordinarily the rotation of the analyzer is all that is needed.

While I protest most emphatically against the ill-considered, careless and erroneous statements embodied in the committee's report, because they lend nothing to the advancement of science nor add to the general respect for scientific research, I wish to express my cordial sympathy with every earnest effort the committee as a whole or its members as individuals may make toward the solution of the problem of erosion and shall be happy to place at their disposal to the fullest possible extent any or all of the resources at my command to that end.

A FEW OBSERVATIONS ON ORAL PROPHYLAXIS.*

BY CHARLES B. ROHLAND, A. M., D. D. S.

Once upon a time a sweet little four-year-old became the proud possessor of a big wax doll. The maternal instinct in her at once responded to the requirements of the new acquisition, and she was unremitting in her attentions to its imaginary physical, mental and moral needs. So devoted was she that it became her constant companion. Whether at home or abroad she was never seen without it. Just at this time, however, the stork made a mysterious visit to the household to which the little girl belonged, and left another youngster. For a day or two after this interesting event, the little girl was missed from her usual haunts, but when she next appeared she was without her customary companion, the big wax doll. "Well," my dear Marie," asked one of her grown up acquaintances, "where is your nice big doll?" "Oh," she replied, as her nose went up in the air, "I don't have any use for wax dolls now. We've got a real meat baby at our house, and that takes up all my time."

The dental profession, too, seems to have had its big wax doll, which it has played with, and paraded for the edification and instruction of the public, with more or less zeal for lo! these many years. The more conscientious and enthusiastic the individual possessor, the more persistently has this doll been exhibited, with ever varying changes in dress and form, but always the same old doll, until the stork came along some few years ago and left a substitute that promises to be a "real meat baby," under the name of oral prophylaxis, and we are confronted with the rather disquieting and mortifying proposition, that what we called oral hygiene, what we once pretended was a real live fact, in view of what is now being accomplished, was after all only a pretense, not even a wax doll, nothing but rag stuffed with sawdust! And the new baby seems to be attracting a great deal of attention, and even appears to contest with porcelain the right to the center of the stage just at the present time.

Wherefore this sudden revival of interest in a subject, the prin-

* Read before the Illinois State Dental Society, Moline, May, 1905.

ciples of which, and even the methods of which have been taught and accepted with implicit faith almost from the very beginning of dentistry as a profession? We have been preaching for years that the price of a good set of teeth was absolute cleanliness of the same—that the mouth was the “hot bed of infection,” that the germs and deposits found there, if left undisturbed, caused disease and destruction of both hard and soft tissues, that the infection found there was a menace to health, that tooth decay always began on the outside, where the tooth was exposed to the actions of the secretions, excretions and accretions in the mouth, that it was due to vicious environment, and that the logical answer to these conditions was to produce a complete change of environment, remove all infectious matter and deposits, and to keep the mouth and teeth sweet and clean. Indeed, it became an axiom that if the oral cavity were kept as clean as the face, there never would be either decay or disease in the mouth—barring traumatism or systemic infection. And this is all there is to the new baby.

Dr. D. D. Smith, of Philadelphia, by reason of the force and persistence with which he has advocated his theories, is perhaps justly entitled to define oral prophylaxis, its scope, its methods and its results. He has at least won for it the attention of the entire profession, and in the light of the positive testimony and experiences of many who became investigators and disciples, he has, so far as practical results are concerned, unquestionably clothed the subject with new interest. Aside, however, from his purely speculative interpretations of the processes by which these results have been obtained, and his views as to the purely local origin of all oral catarrhal and pyorrheal conditions, which the limits of this paper will not permit me to enter into, a careful examination of his writings fails to show anything of importance out of the ordinary well beaten path. In his article, “Six Years’ Work in Oral Prophylaxis,” published in the January *Items*, he describes the usual conditions in the mouth to which is due “the long train of unstudied and pathological conditions which have their origin in the undisturbed infection on and about the teeth.”

He says: “Calcific deposits are constantly occurring and recurring, as well as the more immediately hurtful acidulated, bacterial accumulations, and more dangerous still, the inspissated mucus

which cements mouth fluids, mucoid excretions, decomposing food particles, and other septic and odoriferous matter upon the teeth."

"This debris is all maintained in the high normal heat of the mouth, and furnishes ideal conditions for the proliferation of germs, the induction of decay, and the fostering of disease in the human system." When these conditions are undisturbed, he names the pathological states of the mouth and teeth that ensue, "in the order of their seriousness and frequency," as follows: Pericementitis, alveolar inflammations, dental caries, and impeded alveolar development.

As to the effect of oral infection on the general health, he adds: "I would that it might be recognized by all, that sequences of the universal infection on the teeth and in the oral cavity, are, in our present civilization, affecting the health of humanity to a greater extent than any other one physical condition."

Further, as to the field of oral prophylaxis, he says: "The oral prophylactic treatment, as instituted and recommended by the author, has for its one object and aim the freeing of the oral cavity of conditions of tooth decay which have become practically universal, and the eradication of infection from the same, to conserve human health and prolong human life."

As to what the prophylactic treatment is, he further says: "In general the treatment consists of enforced radical and frequent change of environment for all teeth and the maintenance of perfect sanitation for the oral cavity. More specifically, it is the careful and complete removal of all concretions, calcic deposits, semi-solids, bacterial plaques and inspissated secretions and excretions which gather on the surfaces of the teeth. * * * this instrumentation to be followed in every case by the thorough polishing of all tooth surfaces by hand methods, using for this purpose orange-wood points in suitable holders charged with finely-ground pumice stone as a polishing material." There, in a nutshell, is all there is to it! The description of the mouth conditions, the recognition of the effects of this environment on the teeth, the adjacent tissues and on the general health, and the treatment indicated, all are practically but repetitions of what has been taught and practiced before.

Surely the new baby bears a marked resemblance to the wax doll of old, both in form and feature. But there is a marked differ-

ence, nevertheless. Judged by results, the one is merely an inert mass, whose only function has been to pose and play at house-cleaning, while the other is real flesh and blood, and seems to be capable of doing things.

The revival of interest then appears not to be due to any new or startling discoveries, either in theory or practice, but rather to the results which have followed the more persistent and frequent and systematic application of well known principles to practice.

Perhaps one of the most conclusive as well as impressive bits of evidence that has yet been brought out to prove the beneficial results of systematic attention to oral conditions, is the wonderful results following the enforced hygienic measures practiced by the employes of the Diamond Match Company as detailed by Dr. L. P. Bethel in the March number of the *Dental Summary*. It appears that the Diamond Match Company, owing to the prevalence of oral disease, (especially among the employes exposed to phosphorous fumes, made it a rule, under penalty of discharge, that all employes must have their mouths regularly examined, and pay special attention to keeping the oral cavity free from infectious deposits, and in good sanitary condition.

Dr. Bethel made it his business to make a personal investigation of the conditions prevailing since the enforcement of this rule. The results as detailed are most impressive. Not only has phosphor necrosis, which used to be so prevalent among match-workers, been almost entirely stamped out, but the testimony is emphatic that where diseased, congested, unsightly mouths with horrible odors emanating therefrom, were almost universally prevalent before, normal mouths with every appearance of perfect health are now the rule, and that through the influence of these oral hygienic measures, the general health of the employes has been improved to a very marked extent, that since its enforcement, it has been a noticeable fact, "that fewer days have been lost through sickness," "that during epidemics of disease, fewer employes have been affected by prevailing maladies than before these prophylactic measures were adopted." All this change was presumably brought about through the usual more or less effective measures employed in the average office.

If, then, the wonderful results following the practice of oral prophylaxis after the methods inculcated by Dr. Smith and his fol-

lowers were first received with so much incredulity by "shining lights" in the profession, and are now termed simply wonderful, may not this be said to be a startling reflection on the genuineness of our efforts in this line for so many years?

In view of the meager and disappointing results so often following our work in the care of our patients, would it not seem as though very often we have grievously failed to do our full duty? That Dr. Smith should have succeeded in showing the profession that it has been playing with a mere doll heretofore, instead of the real thing, entitles him to full measure of credit. He has conferred a lasting benefit on his profession by proving that the one vivifying fact of oral prophylaxis as taught by him, lies simply in thoroughness and frequency.

He insists on patients returning once a month for manipulation and treatment, and he has shown that they will do it. He has raised "cleaning of the teeth" to the dignity of a specialty. He has shown that it is no defense to say that we preach but the patient will not follow. Many will not, it is true, which is a most discouraging fact. But let the operator be zealous and earnest, thoroughly appreciative of the dangers lying in oral infection, and of his duty in the premises, and he will be surprised, as others have been, at the readiness with which his suggestions will be taken up and followed in most unexpected quarters.

As oral prophylaxis is usually practiced, the patient sees no results, the teeth fail, and at each returning visit, he finds the mouth deteriorated, the same deposits accumulated, more recession of the gums, more loosening of the teeth. This is most discouraging and no wonder he fails to back up the admonitions of his adviser with enthusiastic support.

The operator, too, becomes discouraged, and his efforts are only half-hearted. The work is difficult and tedious. The next patient or the laboratory is waiting. How easy to cut short his operation and throw the responsibility for deterioration on the patient's laxness.

And then, the fee exacted for the services usually designated "cleaning teeth" is rarely commensurate. The dentist is afraid the patient will object to a gold filling or gold crown fee, for simply "cleaning teeth," although it may have taken the same or even more

time. Dr. Smith objects to the term "cleaning teeth," as applied to prophylactic treatment.

The objection is well founded. It is more than cleaning; it is manipulation, it is treatment, and should be so called, and charged for.

This operation will give but negative results, unless thoroughly done and persistently and systematically followed. How absurd to expect anything definite if the scaling and polishing be done but once every year or two, or longer. "Why, Doctor, my teeth were thoroughly cleaned last time I was here, not more than a year ago, and they are really worse now than ever! I don't believe it does any good to take off the tartar, it comes back right off"! That particular baby was not a real "meat baby"—only a very soiled rag doll.

I will not enter here into a discussion of the specific beneficial results claimed to follow the systematic and frequent use of the manipulative processes of oral prophylactic treatment, but will briefly note a few of them.

First. A remarkable change in the appearance of the teeth, the dull, lifeless appearance of the enamel giving way to a beautiful, "clean, pure, tooth color."

Second. The practical prevention of decay in sound teeth, and the retarding of the process in those already affected.

Third. A marked decrease in the sensitiveness of dentine, especially in children and young patients.

Fourth. Its beneficial effect on unduly sensitive gum and pericemental tissues.

Fifth. For its positive removal of all infection from the mouth and breath.

My own experience with this treatment is too limited yet to enable me to speak with much authority, but corroborated as it is by the testimony of so many others who have seen and experienced and believed, I am prepared to accept all the claims outlined above as not in any manner overdrawn.

Some of the interpretations, however, would seem to be rather difficult to accept in the light of our present knowledge. For instance, the change in the appearance of the teeth is attributed to some physiological action arising from the stimulating influence of

the manipulation received in polishing. One might conceive of some change taking place in the dentine, perhaps an increase in density, but that the enamel could be so affected will hardly be accepted by the profession. The explanation given by Dr. Guilford in the April *Stomatologist* that the change in appearance is due to the rubbing down of the wavy lines or ridges of the enamel surface to a smooth polished plane surface, would seem to be much more logical.

These lines or ridges in the enamel reflect the light and give it an opaque appearance, much as the ridges in certain kinds of glass do, which are intended to prevent their being seen through. This, as Dr. Guilford suggests, would also appear to controvert the claim that there is no appreciable wearing down of the enamel from the frequent polishing with pumice. To this I will revert later on.

Instrumentation. As the removal of calcareous deposits is the first and most important step in oral prophylactic treatment, the selection of proper instruments and their proper manipulation is of the utmost importance. Remembering that the object is to reach all the surfaces of the teeth, and remove deposits of more or less hardness and tenacity, each one must select the form best suited to his own methods of manipulation. What one may find just adapted to his needs, another, on account of a different way of working, will find utterly useless. These instruments, however, should be small and springy, some rigid and strong enough to remove the hardest and most tenacious deposits, others slender, and almost as delicate as explorers to carry to the trained finger the evidence of hidden deposits. For this work, I have found a great deal of comfort in the use of the Tompkins scalers, especially the rights and lefts and the straight number 11, also in the small spoons of different angles and curves of the latest Younger set as revised by Dr. Good.

The latter are so delicate, yet springy and effective, that nothing else with which I have ever had any experience has quite satisfied me as these have. However, no matter how well adapted an instrument may be for the work intended, only after practice and study will one be enabled to bring out its full efficiency.

Instrumentation should never be done with more force than just sufficient to remove the deposits—more will unnecessarily annoy the patient, and may injure the tissues. The movements in scaling should be gentle and deliberate, but positive, moving quietly into

the remotest recesses after the hidden deposit, and having located it, the effort should be to remove it as quietly and gently as though one were trying to get away with it without waking up the entire neighborhood.

One tooth, or group of teeth, should be taken at a time and thoroughly scaled before going to the next, unless the removal is particularly difficult and tedious and painful, when it may be wise to give that particular spot a rest.

The use of iodine to soften and stain the deposits will facilitate their removal. It is also disinfectant. Should the gums and periodontal membrane be hypersensitive, the application of a cocaine solution in adrenalin, or an equivalent, will greatly relieve.

All through instrumentation, the use of a strong jet of warm water, to which a little cassia or other antiseptic has been added, and the washing out of pockets with dioxygen, to remove debris, etc., will be necessary and prove grateful to the patient.

Germicides. I have spoken of adding some germicide to the water used at the chair for syringing or spraying the mouth. My feeling is that germicides should be mainly for office use. The market is flooded with mouth washes of more or less virtue, intended for the destruction and utter annihilation of germs. The universal tendency is to look for specifics, to depend on remedies to take the place of muscle and energy, and our patients are prone to ask for some wash that is easy to apply, that will "prevent tartar and decay" without being compelled to take so much time and labor to remove infectious matter mechanically. It is a question in my mind whether the constant use of strong germicides is not, quite often, productive of more harm than good. Germ life is one of the normal regular processes of nature, and, in the main, it is quite likely the most of these germs are necessary to preserve a proper balance in the vital processes. It is a question whether if it were possible to place and keep a human being in an absolutely sterile environment for an indefinite period, so as to eliminate the possibility of any germs entering into the body, it would not so hinder the natural processes that serious results would follow.

Many germs, undoubtedly, are very good citizens, performing their allotted duties quietly and in order. Simply because a few vicious criminals get into the body politic, and they are always pres-

ent, is no reason for destroying the whole city, good and bad alike. In a healthy community the good will control and render ineffective for evil the criminals among them. Infectious material is always present, but a healthy individual will throw off slight infection, which accounts for his immunity when exposed. In a very diseased mouth it may be wise and necessary to resort to germicides, but after a normal condition is once established they should be discarded. Germicides, like other medicines, in time will become ineffective, and I am quite prepared to believe that the germs themselves may become used to them, and thrive in spite of them—become immune as it were. Anyway, I sympathize to a degree with the young lady who, when she was told by her physician to boil the drinking water in order to destroy the microbes, declined because, as she said, “she’d sooner be an aquarium any day than a morgue!”

The tendency is to overdo in the matter of mouth washes and germicides. As a rule, if all deposits are faithfully removed, and kept removed, as nine times out of ten they are the cause of the oral troubles, nature will effect a cure without further intervention.

Another objection urged against the use of most of these aromatic, alcoholic, germicidal mouth washes, is their perceptant action on the oral fluids.

Instead of dissolving the inspissated mucoid secretions, bacterial products, and deposits, it is claimed that their use will coagulate and precipitate them, which sounds reasonable, and that these coagula readily ferment and become odorous. For this reason the alkaline sodium sulphate, or bicarbonate, would seem to be especially indicated in the mucoid and stringy saliva conditions, so often associated with catarrhal and pyorrhoeal cases.

Powders. Dr. Smith puts great stress on the thorough polishing of all surfaces with pumice, after the removal of deposits. This rubbing, it is claimed, should be done with enough vigor to produce a distinct sensation of warmth in the tooth. To this, presumably, he attributes the physiological response he claims to get. He also insists that a power polisher must never be used. For this injunction I have never heard any explanation. I can see no reason to contra-indicate the use of the engine with brush and wood, or leather points for all surfaces accessible to the hand piece, but for the inaccessible places the hand polisher is, of course, the only resource.

To this vigorous polishing with pumice once a month in an average mouth, the objection has been urged by some very good men that it is bound to result in injury through the ultimate wearing off of the enamel. With this objection I am not altogether in sympathy. To deny that this constant rubbing must necessarily wear down the enamel would be absurd and that it could be used to the injury of the teeth must be admitted; but, as the intelligent dentist would use it, and does use it, I do not believe would in years jeopardize the tooth. Anyway, the deposits on the teeth must be removed and kept removed. If there are rough places in the enamel they must be polished out, even if enamel is removed in doing so. The deposits will affect the enamel surface much more rapidly and injure the tooth structure much more seriously than pumice polishing will. Suppose, however, polishing finally should denude some of the dentine. Do we not see dentine frequently exposed, and where polished by attrition lasting, apparently, as well as enamel itself? If pumice polishing is an evil, it is the lesser one. But I do believe this, that after the tooth has once been polished to a smooth surface, pumice will not be necessary to keep it so if the polishing be done frequently, and, except where stains may appear, the rubbing with chalk or soda bicarbonate will be sufficient. Except in certain cases, pumice, of course, should not be put into the hands of the patient, but should be kept solely for office use. In order to get this as fine as possible, the powdered pumice of the shops should be put in a vessel of water, shaken up, and the coarser particles allowed to settle for five minutes, more or less, the milky fluid then decanted, and the settlings used from that. This will give a very fine powder which may be flavored to suit. As to powder for the use of the patient, let me say that I have no use for a powder without any grit at all. I do not want any impalpable smooth powder like the rice flour and kindred powders that have been advocated. A powder is intended to polish, to remove deposits. It must have grit to do this. I do not fear injury from the moderate but vigorous use of any of the orthodox tooth powders. They can not injure the hard, smooth enamel. Whatever has been worn off the tooth by its use must have previously been attacked and softened by vicious secretions and this had better come off. The bright, clean, hard, smooth surface of "God's enamel," as Dr. Younger calls it, will resist much

better, and the process go on much slower, than it would under a blanket of partially disintegrated tissue.

Tooth Brushes. Here, too, I have no use for the soft, mushy tooth brush sometimes advocated, except in very rare cases. I want a tooth brush with some backbone to it, with some substance to it. It should be small, but full of good stiff, elastic bristles. Small, to reach every part of the mouth; stiff, to give good stimulating friction to both tooth and gum; straight, not curved, because then best adapted to reach the surfaces on both sides of the arch. It should be used in all directions, vertically and horizontally. The "tooth pick" idea, associated with the dozen or more little bristles at the end of the curved brushes does not appeal to me at all. For daily use to remove particles of food, to brush out the softer debris, it is a necessity. In order to keep it in good condition for this purpose and preserve its vitality longer, one should have two or three always in commission for alternate use. As a polisher, however, the tooth brush is utterly inadequate because even with the use of a good powder it fails to entirely remove the adhesive deposits, which are so prevalent and so mischievous to the teeth, and there are too many places inaccessible to the brush.

Sticks. As a polisher, the patient must rely on the stick. One of these should be of soft, white pine, large enough to give a good, firm grasp, chisel shaped, with the end about the width of a lower incisor. This should be smoothly sandpapered, with rounded edges, and the chisel end cut off and again shaped, when worn to a brush. Smaller and shorter orange wood sticks may be used for interproximal spaces and these supplemented with narrow taffeta silk ribbon, which may be loaded with powder and soaped to facilitate getting it between the teeth. Even the straight stick, with a little practice, will reach surfaces inaccessible to the brush, but with the use of the angular porte-polisher, which the patient should have, nearly every exposed surface may be reached.

As outlined above, the faithful performance of our plain duty in oral prophylactic treatment would interfere very materially with the daily practice of the busy dentist. To this objectionable feature may undoubtedly be attributed most of the neglect that this branch of our work has received.

Here, let me suggest, is a wide field of usefulness for woman.

To give the patient the full benefit of oral prophylactic treatment they should be required to come regularly for monthly or bi-monthly grooming. Especially should this be required of children. For this work, a lady assistant, with a little supervision and coaching, will be admirably adapted, and could be taught to do most of this work, especially the monthly polishing, thus relieving the busy dentist and also enabling the work to be done for a smaller fee, thereby bringing its benefits within the reach of a greater number.

I believe, fully, that the dental practice of the future will adjust itself more and more along prophylactic lines, and that it will become the habit to give the absolute control of the oral welfare of the rising generation more and more into the hands of the family dentist, whose duty will be prevention more than reparation. I further believe that the dentist then will feel as much mortification at the appearance of decay in mouths so placed in his hands as he now does at the premature failure of a filling.

The practice attributed to the Chinese of paying the doctor to keep the family well and considering sickness in the light of a reflection on his watchfulness and efficiency, which it becomes his duty to remedy without fee, has some claim to commendation.

Certainly, for the good of humanity, to this end should we work.

PRACTICAL TREATMENT OF PYORRHEA ALVEOLARIS.*

BY AUSTIN F. JAMES, D.D.S., CHICAGO.

I shall not attempt to go into any of the scientific phases of the subject but wish to take a bold stand in favor of thorough practical work in the treatment, as it is my belief that it is the lack of thorough work that is the general cause of failure in curing the disease.

From my clinical experience, I am forced to conclude that pyorrhea is a local disease, and cured by local treatment. While many writers upon the subject advance the theory that pyorrhea is caused by systemic conditions and that it is a constitutional disease, my experience has been that whatever the cause may be, it can

* Read before the Illinois State Dental Society, Moline, May, 1905.

be controlled and cured by local treatment, where there has not been a too great loss of the alveolar processes.

I find that in nine out of ten mouths which come under my observation, I can find local conditions which will cause pyorrhea; in some part of the mouth we will find a loosened, irritated condition of the gum margins and an accumulation of food in a fermentive stage under these margins and upon the surface of the teeth,—the teeth being more or less sensitive to the touch. With properly shaped instruments we will find a ridge or nodule of calcareous deposits upon the neck of the tooth.

While we may find these conditions in many parts of the mouth it does not necessarily mean that the patient is suffering with pyorrhea, but it is this condition, if allowed to remain, which will cause absorption of the alveolar processes and formation of pockets where more food and moisture will accumulate, and the subsequent formation of pus, and a generally infected condition of the month.

I have not the gift of language to so well describe the conditions often found in the mouth as has been done by D. D. Smith, M. D., of Philadelphia, Pa., in an article published in the *Philadelphia Medical Journal* of March 28, 1903, when he writes on mouth infection due to natural teeth. I take the liberty to quote Dr. Smith as follows:

“There are in the human mouth today, as has been the condition through all the centuries, malignant factors of general infection and causes of disease wholly unperceived and neglected, and thus the oral cavity has ever been and still remains a prolific source of contagion, greatly augmenting the infection from this cavity. The air commonly diverted through it, especially in mouth breathers and in sleep, becomes a purveyor of toxic emanations to the lungs where it inevitably deposits its contagion in lung tissue or in the blood. Necessarily the subject of such conditions, this vestibular cavity, with its twenty to thirty square inches of dentate surface becomes quickly infested and infected with all manner of bacterial formations, decomposing food particles, stagnant, inspissated septic matter from saliva, mucus and sputum; not infrequently with pus exudation from irritated and inflamed gum margins; gaseous emanations from decaying teeth and putrescent pulp tissue; salivary calculi (tartar), nicotine and the chemical toxines which result from decomposi-

tion due to mingling of mouth secretions, excretions and food remains in a temperature constantly maintained at the high normal of 98 F. In this is presented a true picture of the innumerable sources of infection inseparably connected with untreated teeth. Incredible as it may appear, these conditions obtain, not in the lower classes alone, but in general mouth conditions in high and low born, fastidious and poor, king and peasant."

We will all have to admit frankly that Dr. Smith has, I might say, beautifully described the conditions found in the mouths of our patients and that we need not look for constitutional causes, when we know that this is the existing condition and that the calcareous deposit found upon the teeth must be the direct result of this condition, and that this deposit, with fermentive foods and secretions, is the irritating cause of the inflamed, ulcerated, pus discharging gums in pyorrhea mouths.

The first step in the treatment of pyorrhea must be the prophylactic treatment, so far as the mouth in general is concerned. Then the removal of deposits, and here we come to the most difficult thing that a dentist has to do—the one operation which requires the greatest skill in the handling of instruments and a greater development of the senses than any other operation the dentist is called upon to perform. And with all this, a conscience that will not allow him to believe that he has done his work well until he has made one more effort to prove it.

In all pathological conditions the first step in the treatment is to find the cause, and then proceed to remove that cause.

This we as dentists too often fail to do, but are prone to look for the opportunity to crown a tooth, place a filling, or bridge a space where teeth have been lost, and fail to realize the fact that teeth do not decay because they are teeth, or that our gums are not naturally tender, and should not bleed at a touch.

After having given especial thought and effort on the treatment of this disease for a period of more than eight years, I can make the positive statement that I am curing many of these cases by surgical treatment; that is, the selection of properly shaped instruments, suitable for getting at every surface of each tooth, and knowing that I have thoroughly removed all the deposits of calculi and carefully smoothed and polished the necks of the teeth.

For the removal of these deposits I have selected the most suitable instruments from the many sets found in the dental supply houses, my choice being the Younger set improved by Dr. Good, the Mawhinney, and some of Dr. D. D. Smith's set, all of which I here exhibit. For polishing I make use of the orange wood and finely powdered pumice.

The removal of deposits can be accomplished without the use of anesthetics and with no pain to the patient if care is used in selecting the proper instrument for each position.

The patient is then instructed as to how to properly care for the gums and teeth, and in the use of brushes for massaging the gums and cleansing the teeth.

When pus pockets are found after removing deposits and they have been syringed with warm water, a 20 per cent solution of argyrol is used, freely injecting the solution into the pockets. The argyrol is a thorough non-irritating disinfectant and invariably prevents soreness following the surgical treatment, and is the only drug I find necessary in the treatment of pyorrhea aside from a good mouth wash for continuous use.

Patients are told to spend from three to five minutes twice a day massaging the gums with brushes, thinking what they are doing and timing the treatment to the full time by the clock.

Patients do not always respond to the simple telling, and as this is the only preventive we have against a recurrence of the disease, I allow myself to become a crank upon this subject with pyorrhea patients, and talk massaging of the gums and care of the mouth from the time they enter my private office until they retire, and in this way have taught many of them to become enthusiasts and find that recurrence can be prevented as well as the teeth be made practically immune from decay.

The operator should never admit to himself that the deposits have been removed until the condition of the gums proves that it is so by their becoming firm and hard around the necks of the teeth.

When teeth are found to be so extremely sensitive that it is impossible to use instruments, this sensitiveness can be overcome by thoroughly polishing the teeth with orange wood and pumice, thereby mechanically removing the fermentive accumulation of food and secretions, and having the patient use neutralizing agents until a

second sitting can be had, when instruments can be used without causing pain.

All instruments used should be the kind known as draw instruments, having rounded surfaces where they come in contact with the gum tissue; by the careful use of these instruments you will often be rewarded by the pleasant statement coming from patients that they have suffered no pain at all, after sittings of an hour or more duration.

In all cases where the teeth are loosened, retaining appliances must be used to put the parts at rest during the healing and reformation of tissues.

In many cases it is advisable to make permanent appliances, cementing them in place, as there is no possibility of the reformation of the alveolar processes, and the most we can hope to do is to destroy the pus pockets and keep them clean until filled in with new soft tissues.

While I do not claim to give anything new to the profession this paper is meant to plead for more thorough work along this line and to insist that many more teeth can be saved than at the present time, and at least we can prevent pyorrhea alveolaris.

PRESIDENT'S ADDRESS.*

BY DR. F. FOERSTER, BERLIN, GERMANY.

Gentlemen of the American Dental Society of Europe:

In opening the regular session of the thirty-second meeting of this society I bid you all a hearty welcome. I wish first to thank you sincerely for the honor you have conferred upon me by electing me as your president. I feel the importance of this honored position and hope to do my best to justify it, and also hope that you will be considerate with me whilst I try to fulfil my duties.

The locality selected at our last meeting for this year seems, on account of its central location, specially favorable, and we have among us this time some of our most distinguished members. I will mention only the name of Prof. W. D. Miller. Then we can

* Read before the American Dental Society of Europe, Geneva, Switzerland, April, 1905.

congratulate ourselves on our excellent local committee under the able management of our colleague, Dr. Patterson, who has done everything to make this meeting a successful one. During the past year the executive committee has carefully considered every proposition submitted to it and has wrought out what seemed best for the society.

Societies similar to ours which have enjoyed the largest degree of permanence coupled with the greatest progress, have been those which retained in office as long as possible good secretaries and treasurers; officers who communicate directly with the members.

It is customary for the president of this society to deliver an address at the opening of the meeting. I was in doubt if I should follow this custom. Considering the long list of interesting papers on the program I do not feel justified in taking up too much of your valuable time and will therefore give you only a brief summary of some of the most important events and discoveries that have occurred in our profession during the past year.

With deep regret we have to record the loss of one of our oldest members whose name is well known throughout Germany, E. C. Young of Leipzig. At a suitable time I shall ask your permission to introduce a motion to appoint a committee to draft resolutions befitting the demise of our late colleague.

Allow me to call your attention to the fourth International Dental Congress of St. Louis. This congress, no doubt, suffered in a high degree through deplorable misunderstandings and disputes among its members, which, fortunately, were at last put aside, restoring complete harmony.

This shows us that the interest in our science and in our endeavors outweigh personal interests, a fact that we can greet with great pleasure. Then again, we surely are all of the opinion that in the development and growth of a profession, not alone the scientific and practical sides are to be taken into consideration, but the social and harmonious feelings also play a qualified role. As far as the actual success from a scientific and practical standpoint is concerned, I think the International Dental Congress of St. Louis can compare favorably with any similar preceding meeting of its kind.

At this congress the International Dental Federation was newly founded and reorganized. We have all hopes to believe that this

organization will play an important role in bringing about friendly intercourse and reëstablishing friendly feelings among the dentists of the different parts of the world.

With regard to the practical side of our profession, allow me to mention that porcelain has held its own as a filling material, and is steadily coming more and more to the front; there is today hardly a practitioner of any repute who does not use the material.

There is still much controversy among the advocates of high and low fusing bodies, but we can see from the different discussions that the Jenkins body is gradually winning ground. Then we have now several makes of so-called porcelain cements, which have recently been brought out, and time alone can tell if this material will fulfil its expectations.

The Röntgen ray, which a few years ago was hardly known among dentists, is now becoming public property in our profession. It is now extensively used in diagnosing different pathological conditions of the teeth and jaws, in blind abscess, cysts, excementosis, resorption of the roots, in discovering retained teeth, to find the position of teeth and roots in regulating cases, etc. This process is of excellent service to us, in fact has become almost indispensable.

Experiments have been made with the Röntgen rays and also with the Finsen light for therapeutic uses, but have not as yet led to any definite results. The Finsen light, which was discovered by Professor Finsen of Copenhagen, is a large arc lamp of about twenty thousand candle power and uses from sixty to eighty amperes of current.

The Finsen lamp produces a much greater number of chemical rays than sunlight. The light is so intense that it is necessary for the attendants and patients to wear smoked glasses while the lamp is in operation. This light has been used with marked success in curing many skin diseases, especially lupus and rodent ulcer. This treatment causes no pain; a red spot and blister appear when the light is applied and in five or six days the scab falls off and the skin is left free from scar or cicatrix; the redness, however, after a variable period, fades and leaves the skin white and uncontracted. Especially interesting to us are the preparations (extracts) derived from the suprarenal gland, in particular the use of paranephrin,

combined with cocaine for the painless extraction of teeth and for obtunding sensitive dentine.

It is now well known that pressure anesthesia in connection with cocaine will allow the painless extirpation of a living pulp. This method is now extensively used and is especially adapted for single-rooted teeth.

Recently the subject of prophylaxis has been taken up in two different directions. On the one side Wright of Cincinnati and Smith of Philadelphia advocate thorough and intensive cleansing and massage of the teeth and gums. They see their patients, if possible, every fortnight or every month or at least every two months to thoroughly clean their teeth, whereby every tooth is polished with stick and fine pumice stone, by which the pulp is supposed to become more active and cause a hardening of tooth structure. Smith even goes so far as to maintain that his method has a tendency to harden the enamel.

In contra-distinction to this mechanical treatment of the teeth the use of nitrate of silver, which was recommended by Stebbens, 1891, for therapeutic, and by Frank, Vienna, 1897, for prophylactic uses, has again been taken up and warmly endorsed by Dr. Bryan, who I hope is present and will probably tell us what results he has obtained.

Then I would like to call your attention to an occurrence of the past year of which we have all, to our sorrow, taken cognizance. As you know, two years ago the American Association of Dental Faculties concluded to adopt a four-year course for the study of dentistry, which was also introduced. After a short trial the Association returned again to their three-year course, notwithstanding violent opposition on the part of some of its members. We deplore this retrogression most emphatically and hope that within a short time the Association will again return to the four-year course.

In the last few years our profession has developed with such gigantic strides and expanded in so many different directions, that it is almost impossible for a student to imbibe all the necessary knowledge to prepare him for actual practice in three years of seven months in each course.

With these short remarks on a few events of the past year I close my address and hope that our meeting will be interesting and successful. (Cheers.)

A COMMUNICATION.*

BY DR. C. M. WRIGHT, CINCINNATI, OHIO.

I have just received the program of the thirty-second annual meeting of the American Dental Society of Europe. Can it be thirty-two years since Terry, Williams, Field and Wright met on the Rigi, organized and *named* the society which has lived so long and made such a splendid record for itself among the progressive societies of the dental world? A meeting was held the same year pursuant to a call made by the secretary in Basel. Some work of organization was done at this time, and Geneva, Hotel de la Paix, was selected as the first real meeting of the new society. Abbot, Dumont, Paetsch, Jenkins and others came down in a body from Germany, bringing with them the enthusiasm which fixed the fate of the society. The lovable Jenkins is on your program today, and the magnetism of his soul is as great now as it was then. I cannot let this meeting pass without a word to express congratulations on your continual success, and love for the dear old society. May I, then, instead of words of praise, offer a thought which has been flying about from one branch to another of my inter-cranial nerves in regard to a new field of orthopedic and prophylactic dental practice? Science has broadened our reasons for performing many of the same dental operations which we did perhaps as well then, thirty-two years ago, as we do now. Our practice has changed some, but not so much as have our *principles* of practice. The filling of teeth today is done for more reasons than it was in the olden times. Then, it was only for the purpose of arresting caries, and we made a flat, permanent filling for the cavities. Now it is done to restore the form and occlusion of the tooth as a useful part of an organ with important functions. Again, at that time, orthodontia meant the straightening of incisors for appearance sake, and first permanent molars, or bicuspsids, were removed to make spaces and facilitate the

* Read before the American Dental Society of Europe, Geneva, Switzerland, April, 1905.

moving into position of the front teeth. Now, orthodontia has broadened into orthopedic measures for the complete arrangement of entire dentures, and to bring them into harmony with facial and functional perfection. The extraction of first permanent molars and pre-molars, is not the best practice of today. Just here comes in my thought. It is this. If thumb-sucking in early infancy can produce prominence of the anterior segment of the maxillary arch, can not intelligently and persistently applied manipulative pressure by the dentist or the dental nurse (when we establish this class) or the anxious mother, broaden and direct into proper form the developing arch of the child? Finger pressure laterally, in the mouth of the infant, after the appearance of the deciduous teeth and before the eruption of the permanent molars and central incisors, could I am sure, direct the structural development in these growing tissues, and help to overcome the inherited tendencies of past ages of lack of use of the organs. I know of a case here, where a queer little apparatus is applied to the too prominent ears of a four-months-old baby, by an orthopedic surgeon, for the purpose of flattening the ears and improving the looks of this little swamp angel with the flapping wings on the side of its head. We should have not only improved appearance, but better function, and all the advantages that pertain to a perfect mastication and voice organ to work for. In our aspirations in this line we have embryology, physiology, histo-pathology and prophylaxis to furnish grounds for the universal adoption of this branch of practice. The principle, too, is correct when we consider the opposite effects of pressure from open mouth breathing, on the developing maxillas.

I offer this with my heartiest greeting to you and the members of the American Dental Society of Europe.

SOLBRIG'S PORCELAIN JACKET CROWN.*

BY JOHN H. SPAULDING, D. D. S., PARIS, FRANCE.

Mr. President and Gentlemen:

Before entering upon a description of the technique used in the operations which are the subject of this paper I wish to call atten-

* Read before the American Dental Society of Europe, Geneva, Switzerland, April, 1905.

tion to a few facts which show to whom the profession is indebted for the original idea of such a crown, as well as for the procedure which has resulted in improving and perfecting it, and placing it before the profession as a practical and artistic reality.

In the early summer of 1903 one of my patients who had very unsightly teeth, owing to extensive erosion, followed by dark brown discoloration, asked me if there was not some way of re-enamelling them. I told her that I did not know of any. Just at this time I read the article in the *Dental Cosmos*, June, 1903, written by Dr. C. H. Land, of Detroit, in which he speaks of "Enamelled Caps or Jacket Crowns." This article interested me so much that I called the attention of my assistant to it. I left in July for America and promised myself a visit to Dr. Land to inspect his method personally, but was prevented from seeing him.

Upon my return home in September, 1903, my assistant placed in my hands three of the most beautiful all porcelain jacket crowns which it is possible to imagine—the result of his experiments during the summer. I was simply delighted with the beauty and natural appearance of these crowns, and we immediately put to a practical use this most artistic invention. I wish to give credit to Dr. C. H. Land for the original suggestion, of which it is the evolution and perfectionment. Judging from the facts related in an article by Henry W. Gillett, D. M. D., of New York, in the *International Dental Journal* for May, 1904, under the title "Spalding's Porcelain Jacket Crown," we have here an undoubted case of coincident and simultaneous invention on the part of Dr. Edward B. Spalding, of Detroit, and Dr. Oskar Solbrig of Paris, and I believe it to be the most artistic, as well as practical, of anything which has ever been given to our profession, excepting, perhaps, porcelain enamel inlays.

I believe, further, that they will ultimately almost entirely take the place of pivot crowns in any of the six anterior teeth, because the bulk of the natural tooth just where the strain is greatest—at the gum line—does not have to be cut away, the entire strength of the tooth being thus retained and this is augmented by the porcelain crown.

We have twelve of these crowns doing solid service for many months, some as long as one year and seven months, and we have the greatest confidence in their long durability.

Dr. Solbrig's procedure originated entirely with himself, having for its point of departure nothing but the somewhat vague suggestions contained in the article by Dr. Land, above referred to, and, while arriving at the same practical result as Dr. Edward B. Spalding's, is quite different, and would appear to give a more absolutely exact and certain result with the least trouble to both patient and operator.

Dr. Solbrig makes no shoulder at or under the gum margin, but first removes all existing natural enamel and gives the tooth a conical shape and shortens it as much as possible, if living—as much as prudent if pulpless. (See Fig. I. (a), showing tooth with enamel, (b) and (c) showing side and front views of prepared stump.)

An ordinary plate tooth (we use English teeth which permit

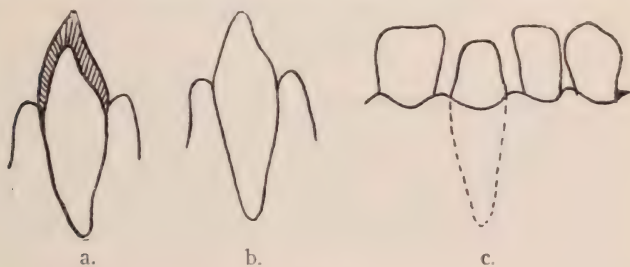


Fig. 1.

of shaping and polishing at will) is then ground out concave on the under side, making a fine, almost feather, edge, where it slips under the gum margin and is exactly fitted to the stump at this point. This we will call the porcelain facing or veneer.* A strip of rolled cohesive gold foil No. 40, the width of which corresponds to the length of the stump, is then placed around the latter and slipped as high as possible under the gum and held in position laterally by pieces of spunk wedged against the adjoining teeth. (See Fig. 2.) This band is then folded with pliers both on the palatal and labial sides (See Fig. 3a) drawing the gold as tightly as possible to the contour of the stump. This is now lifted off the stump and annealed and the excess of gold where folded is then cut away with scissors which welds the gold at these points (front

* Porcelain veneers are now produced by the manufacturers of porcelain teeth in America, and I hope Ash & Sons will also do so very soon.

and back) leaving a conical cap, or matrix, of gold (Fig. 3b). This cap is now replaced on the stump and reburnished over its entire surface. A little beeswax is then placed on the labial surface of this gold matrix as well as in the concave of the porcelain facing; also a small softened piece against the lingual side of the matrix; the

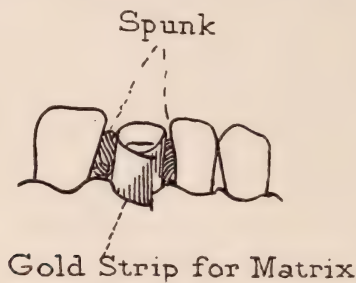


Fig. 2.

facing is then placed in position and pressed home, if necessary, with a warm spatula. (See Fig. 4a, b and c.) When cool, the whole is removed from the stump and invested in powdered asbestos paste. It will be noticed that the relative positions of porcelain facing and gold matrix, as well as the adjustment on the stump are absolutely exact

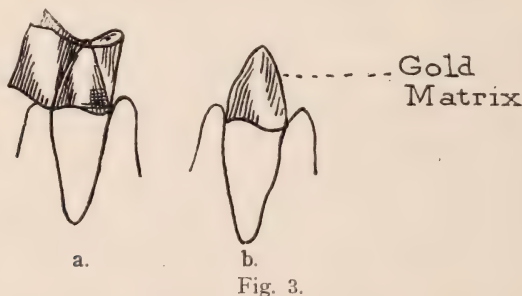


Fig. 3.

and the investment in powdered asbestos maintains these conditions *and also enters the matrix, taking the place of the stump itself.* After drying, the wax is removed by warming and, finally, burning out, and its place between the facing and the matrix is filled with porcelain, which is then fused, thus uniting the facing and matrix.

Additions of porcelain and repeated fusings are made until this space is entirely filled. The investment is then removed, *except that*

part which enters the matrix, and which represents the stump of the tooth. It is very essential to retain this part of the investment until the crown is entirely finished, as it prevents any possible change in the shape of the matrix or gold cap during manipulation. Subsequent additions of porcelain and fusing are then made until the lateral and lingual aspects of the crown are covered and the crown is complete. There is no necessity to have the patient return for reburnishing the gold matrix.

When the bakings are finished the gold matrix is stripped out, leaving a porcelain cap exactly the same shape and form as would be the natural enamel were it possible to lift it off from the dentine, but it is much thicker and stronger, except at the margins where it is made exactly to represent and replace the natural enamel. There

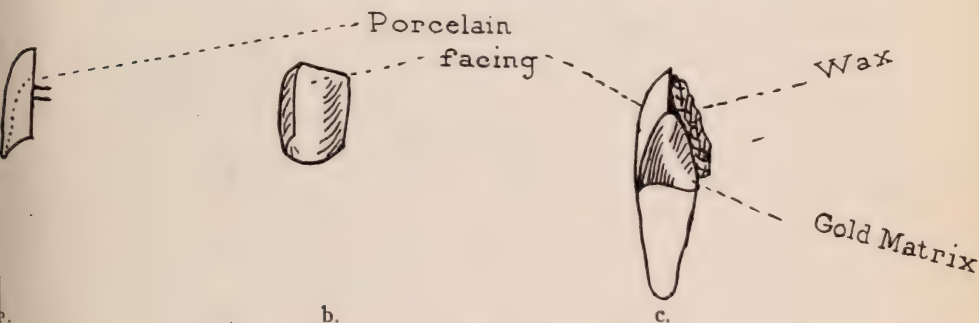


Fig. 4.

is no shoulder to fit, therefore, no joint, and in the case of recession of the gum the tooth would not be more unsightly than a natural tooth under the same condition.

I wish to call your especial attention to the great value this method has, apart from its artistic appearance, over the ordinary pivot tooth of any system in the matter of strength. When a cuspid or incisor is cut off even with the gum, and the strongest pivot tooth that is possible to make has been adjusted and cemented in, you have still the weakest point just where the greatest strength is required, viz., at the gum margin, and the frequent bending or breaking of the pivot at this point is a witness to its weakness and to the stress which it is called upon to support. A porcelain jacket crown made and set as herein described not only makes it unnecessary to

weaken the natural tooth in the slightest degree, but gives it added strength and solidity. In the case of pulpless teeth, the remaining dentine may be reinforced by cementing a thick, strong, metal pivot into the tooth. Before setting, the interior of the jacket crown should be roughened or etched with hydrofluoric acid, thus giving a surface much better adapted for the attachment of the cement which ensures the maximum of strength between the porcelain and the stump. For setting, we give the preference to Harvard cement, as it is very tenacious and becomes exceedingly hard with time.

We use Dr. Jenkins' new porcelain enamel, or prosthetic porcelain, which fuses just under the fusing point of pure gold, and is exceedingly strong and fine grained. It unites perfectly with the English teeth and can be ground and repolished as circumstances and convenience require. We consider it the ne plus ultra of strength, reliability and convenience of manipulation.

I have brought some specimens of these crowns which can be passed 'round for the inspection of those present. If the paper is not clear in any point as to the manipulation and technical part, I shall be very glad to reply to any questions anybody may wish to ask.

PROCEEDINGS OF SOCIETIES.

ILLINOIS STATE DENTAL SOCIETY, MOLINE, MAY 9,
10, 11, 1905.

DISCUSSION OF THE PAPERS OF DRs. ROHLAND AND JAMES.

DR. E. H. ALLEN, of Freeport:

I have read from time to time the papers of Dr. Smith, and of his method of practice, which Dr. Rohland has freely referred to, and I had thought that possibly the polishing of the teeth, as he speaks of it, with pumice and stick, might in time injure the enamel, but I hardly believe there is any danger to be feared from that source—not nearly so much as the danger resulting from the accumulations that are left there, furnishing food for the bacteria that cause caries of the teeth.

There is a great difference in people. Some never seem to have clean teeth no matter what they do. There seems to be something about the condition of the mouth that causes the deposits to accumulate in an hour or so, perhaps, after a meal. On the other hand there are people who never clean their teeth, and their teeth are always clean. Some people keep their teeth and mouth scrupulously clean, and in spite of all that labor and effort cavities are constantly occurring in the teeth. Professor Darby used to tell of a coachman who had very white teeth. He was an Irishman. One day he asked him how he kept his teeth so white, and was surprised to learn that he never brushed his teeth at all, and yet his mouth was clean. I have in mind an old man who is past seventy years. He is a Scotch-Irishman, and has chewed tobacco all his life. He hasn't any pyorrhea and almost no recession of the gums, and he does not brush his teeth. There must be some restraining influence in the mouths of those two men I have cited that is present all the time, because they certainly have not the same conditions producing decay that you will find in the mouths of others.

I do not mention these things to depreciate the advisability of prophylaxis, because I think that is all right, and if we could only get our patients to do their part there would be a little encourage-

ment on the part of dentists to thoroughly clean the teeth in the manner prescribed by Dr. Rohland in his paper.

In my young days I had the care of a young lady who was very careless about cleaning her teeth. I spoke to her a number of times about it, but could not get her to take any care of her teeth in the way of brushing. Finally I said to her: "Don't ever come to me again with your teeth in the condition they are now. You certainly ought to have enough pride to keep them clean." She never came back. (Laughter.)

I want to say just a few words in regard to Dr. James' paper. One or two phases of pyorrhea have been a sort of revelation to me, and the treatment originated, so far as I am concerned, with the man I shall refer to. He lost a large number of his teeth with the real pyorrhea, and he applied for treatment to a number of dentists. I have known him for a great many years, and about three years ago he came to me. He told me how many teeth he had lost. He told me that he had just pulled them out himself, but that he had cured all those remaining. He said that he had tried everything that he ever heard of, but that he cured the disease with the application of common salt, and he did, too. The man is nearly seventy years old, and he has no pyorrhea about his mouth now. His gums are solid and healthy, and the recession has stopped. His teeth are so firm that I had no hesitation in making a bridge and attaching it to those teeth. He said that he used to work the salt down into the sockets with a tooth pick. He did that several times each day, and when he brushed his teeth he used salt. I induced a lady teacher to try this method. Her pyorrhea was not so general as the other case, but she could squeeze pus out of the sockets, particularly of the superior incisors, at any time. She used the salt treatment, and I saw her about three months later, when the condition had almost entirely disappeared. There were only one or two places where I found any pus whatever. (Applause.)

DR. J. E. HANCOCK, Chicago:

The average practitioner pays very little attention to the subject of prophylaxis. We are usually so much absorbed in the completion of beautiful and artistic mechanical effects, and collecting the fees therefor that we lose sight of the fact that our patients need intelligent advice as to the care of the mouth, which

if carried into effect will go a long way towards prevention of recurrent decay of the teeth and hence the usefulness of these beautiful mechanical operations will be prolonged. Much has been written upon this subject and many discussions have been brought out, but this usually occurs in our meetings and in our dental journals, and we as dentists get the theoretical benefit, while our patients, those most directly concerned, are allowed to go uninstructed. Upon dental subjects, and especially upon the subjects of prophylaxis and hygiene, we should constitute ourselves individual instructors and insist upon our patients observing at least the common rules of cleanliness. How often are we approached by a brother dentist with some such remark as this, "Say, I have something to show you which I think very artistic." You look and behold a beautiful inlay, or perhaps you would be shown a mechanically perfect gold filling, an artistic piece of bridge or plate work, and then you glance casually around and find a deplorable state of—yes, I will say filth—all as a result of neglect on the part of the patient. Is the patient to blame entirely for this condition? I say no. The dentist is to blame. The work of cleansing the mouth is the first thing that a dentist should do, and then proceed with the mechanical art. It is a notable fact that the last fifty years has witnessed great strides along the line of mechanical treatment of the teeth. Splendid and useful instruments have been devised and perfected that we may perform operations with more ease and comfort both to the patient and operator,—but little has been done, comparatively speaking, along the line of prophylaxis. It is not that we do not know better, but we are too eager in the direction of mechanical perfection to give the proper attention to this particular line of work. The promulgation of the theory of "extension for prevention," as advocated and taught by Dr. Black, to my mind has done more for oral prophylaxis than any other one thing—for certainly teeth badly decayed and broken down, when properly contoured and restored are capable of being kept in a more perfect state of cleanliness than when the natural contour is neglected. I shall never forget the final address of my old dean, Dr. R. B. Winder, when he said to the graduating class, "Young gentlemen, never spare tooth structure when it will interfere with absolute cleanliness after your operation is completed." Another point which it seems the essayist has failed to place proper stress upon, is the pro-

phylaxis of the oral cavity where syphilitic lesions are present. How easy it is for us, with instruments which we may have used on a syphilitic patient, to unknowingly transfer this most abhorrent disease to other patients. Therefore, it seems that we should be scrupulously careful and sterilize our instruments thoroughly after each patient, and thereby prevent such a calamity. It only takes a few minutes and it seems to me the safe side is the best side.

DR. M. R. HARNED, of Rockford:

As I understand the meaning of prophylactic treatment it is simply preventive treatment. As the doctor has stated, medicines in the oral cavity are necessarily very limited in their preventive action, and the treatment resolves itself into one simple formula, viz.: cleanliness. And to that we can contribute but little. It is mainly a life habit. We may do our best with our treatment, and may talk until we are tired, but unless we awaken the patient to the necessity of doing his part it will be of small avail. We tell them to brush thoroughly after each meal, and before retiring, with a good stiff brush, and to have enough brushes so as to use each one but once a day, which is economy.

But Dr. E. Palie has just come out in a recent number of *The Dietetics and Hygienic Gazette*, on: "The Abuse of the Tooth Brush." He says: "Nowhere is the brush used with such vigor as in this country, and nowhere is there so great a demand for artificial teeth." He might say also that nowhere is there so much sunshine, nor so many deaths from consumption, and might draw the deduction that sunshine is the cause of consumption. He warns us against the use of the brush, tells us the mouth is always teeming with microbes, and that a brush with stiff bristles is apt to inoculate us and produce very serious results. He says that a brush is always loaded with micro-organisms, which is true, but we hope they are our kind. We don't seem to be able to get along without these micro-organisms, and a tooth-brush is not for public use. His advice is to use pellets of cotton and throw them away.

I have tried to find a simple and practical way to clean the teeth, one within the reach of every one, so there can be only one excuse for my patient, whoever he may be. My plan is this: Take a match—a burnt one is preferable, and with two strokes of a sharp knife make one end into a tapering wedge. The pine is soft, and the stick

is short, but if not short enough break it off. This in the thumb and finger makes the finest sort of polisher imaginable for the patient to use on himself. Dip the wedge shaped end into levigated pumice, for I agree with Dr. Rohland that we want grit, and I wouldn't give a snap for the average powder when teeth really need cleaning. The pumice should be carried to practically any and all surfaces of the teeth that need cleaning. If there are stains mix a little pumice with dioxogen, making a paste. Now rinse thoroughly and vigorously. Most patients must be taught to do this. I believe the rinsing is just as important as the brushing, and in many cases more so. If the gums are flabby, and the mouth inactive, set them to chewing gum, and a good big quid of it. Then enthusiastically impress upon the patient his part in prevention as being much more important than your own. With regard to fees, the term "prophylaxis" will help some in that it sounds more learned, and patients may sometimes be more willing to pay for prophylactic treatment than for cleaning.

The suggestion that was made in regard to having an assistant to do this work is quite novel, but I feel that it is better to help the patients to help themselves. (Applause.)

DR. G. V. BLACK, of Chicago:

Dr. James' paper was placed in my hands several days ago, so that I have had time to look it over and consider it.

There is nothing so important for us to urge as the matter of thoroughness in the treatment of this disease. Whatever we may think as to the causes of diseases of the peridental membranes beginning at the gingival margins, whether we consider them purely local or that there are systemic conditions behind them, thoroughness in the local work is of first importance, and without this any other remedies that we may resort to will be of little avail. Therefore, I can not too strongly recommend this principal point in the treatment of this group of diseases.

As to the word "pyorrhea," I have always considered it bad; it means nothing, and so long as we group these classes of diseases under one word we will be continually going astray in the treatment of them. In other words, there is a large per cent of the calcic inflammations of the gums and peridental membranes that get well promptly with the thorough removal of the deposits, while there is another portion, of a different pathology, that will require long and

persistent effort before a cure is achieved. Even after we have succeeded in an apparent cure they will require continual watching and attention to prevent recurrence. In the calcic inflammations, reasonable care on the part of the patient is sufficient to keep the case in good condition after a cure is once effected. Unless we are able to distinguish between these two, we are likely to bestow unnecessary attention upon a large number of cases and insufficient attention upon the smaller number that require our greatest skill. The distinction between phagedenic pericementitis and calcic inflammation of the gums, both of which are classed as "pyorrhea," is one of the most important features of the clinical management of these cases. These differences have been described so often and yet are so persistently ignored that I hardly know whether I should go into it in this discussion. With the exception of this point, I can only commend the paper.

The diseases in question have had my attention for many years, and with all the information gained since I do not think I should make much change in my articles in the "American System," if asked to rewrite them for publication. I might add some remedies not used then, and yet I know of none that would be much better than the ones then recommended. In the application of remedies we should always choose stimulating antiseptics, never those that tend to destroy tissue or to prevent cell development, but those that stimulate cell development. Therefore, we should use no caustic remedies whatever, but the removal of all deposits and the keeping of the parts clean must be the most important features of the treatment.

The instruments recommended are good. I usually want to duplicate the forms of these with push points as well as pull points.

I do not know that I care to say much of the mouth as a place of infection. It is certainly true that the mouth catches up all classes of micro-organisms that may be floating in the air. They pass into the mouth and lodge in its fluids and a very large number of them will develop there. Most, if not all of the pathogenic organisms will develop in the human saliva, but their growth there is of short duration as a rule. Only a few have become habituated to the mouth so that they continue to grow there, and in this case, according to my observation, they become so modified as to be no longer danger-

ous in a pathogenic sense. For instance, *staphylococcus pyogenes albus* readily becomes habituated to life in the human saliva and becomes so modified that it is but slightly dangerous as to abscess formation, indeed I have found that it is not likely to produce abscess even when injected in a guinea pig. This micrococcus, when taken from abscess and grown in the same way and used similarly for infections, produces suppuration promptly. I have tried this a number of times with the same result, yet the two agree in all other tests of artificial cultivation. I do not regard the mouth as so dangerous a source of infection as some recent writers seem to have done. The tissues of the mouth are more resistant to the encroachment of pathogenic germs than other parts of the body. The fact that they are subjected to the presence of these growths so continually is the probable reason for it. All of this calls strongly to our notice the fact that there are systemic conditions lying over and beyond, influencing these local conditions and infections, that are as yet but vaguely known. This induces us again to inquire why it is that there is such a widespread infection occasionally in some of the diseases of children at particular times. Physicians used to say that these things were in the air. Now we are inclined to think that it is something in the chemical constitution of the fluids and cellular elements of the body occurring in the individuals of the community which render them more favorable soil for the growth of certain micro-organisms. We who work with the pathological conditions of the mouth must wait for developments in other fields of pathology that will assist us to explain what we lack in knowledge of our own particular field. This is not only true in the pathology of the peridental membranes, but it is true in caries, it is true in the case of infections that bring on alveolar abscesses in unusual numbers at particular times, and in many other things that are important to us, and this we should not lose sight of. The individual is to be considered strictly in the light of the conditions of that individual, in the treatment of any of these cases, even though we may consider the disease purely local and that local remedies are of the first importance, still the condition of the individual will in a large measure control the results of our work, and the placing of that individual in the best possible condition is an important feature.

Now, a word in regard to the quotations from Dr. D. D. Smith.

I may say that I have been watching that matter with great interest to see what will come of it. That idea was first brought forward by a gentleman residing in California whose name I have lost for the moment and who seems to have disappeared, at least I have heard nothing of him for some years. It does not seem to me that many patients can afford the time and trouble that this treatment requires for the hope of the prospective good that is in store for them. Although these diseases of the peridental membranes are frequent, they have not anything like the frequency of caries or some other diseases that we treat. Thus far we have no statistics that will give us reasonable and just data as to the frequency of the severer diseases of the peridental membranes, but I think they will not be difficult to obtain once we get at it right. I am able with the great clinic under my command to find out how many per thousand presenting for treatment have diseases of this nature, and in this we ought to exclude all milder forms of the calcic inflammations. These are so easy of management, particularly the salivary calculus forms, that no one with fair skill in the removal of deposits should fail to cure them when they are presented in time. The serumal forms, of course, are much more difficult, but often these get well promptly when taken in time and they only require more time and skill in the use of instruments.

Another point in regard to the serumal forms is that in many cases the patients can not prevent their recurrence by the use of the toothbrush, while in the salivary forms they can.

As to the liability of persons to these diseases and the condition of the liability, I might say a word: I regard infection in phagedenic pericementitis as being due not to any condition of the disease but to an acid diathesis. This acid diathesis is not necessarily of a rheumatic or gouty variety, for certainly we have known persons who have had phagedenic pericementitis and also persons who are badly troubled with salivary deposits who have lived to a good old age and never given symptoms of rheumatism or gout, not only a few but many of them. It seems to me sufficiently evident that we have an acid diathesis that is independent of these diseases and that causes no tendency toward them. I have not much sympathy with the idea that these diseases are caused by some other disease of organs at a distance, or the febrile diseases, or anything of that nature, but that

the acid diathesis renders the persons more liable to this form of disease. This diathesis is probably incapable of being charged by any form of medication known to us today.

I wish to say a word as to the previous paper, especially in regard to what was said about the work being done in the match factories, and implying that this work was following out the method as proposed by Dr. Smith. From my investigation I have taken a totally different view of it. In the match factories in this country they have instituted voluntarily a systematic observation and treatment of the mouths of the operatives. They employ a man whose business it is to examine the mouth of every employe who goes into the match factory to work. None are allowed to work there who have broken or decayed teeth. If there are cavities they must be filled. If there are roots they must be removed, and the mouths kept clean. Further improvements have been made in the method of manufacture also that protect the employes from the fumes more than they had been heretofore. These methods have been vigorously administered, and have effected a saving of time to the operatives and prevented disease; however, I do not understand that this is at all the prophylactic treatment that Dr. Smith has been making use of, or which has been recommended here. That the treatment has been effective there can be no doubt, as it has almost completely prevented the phosphorus necrosis that before prevailed in those factories. We will understand readily that a person who goes into such a factory with decayed and broken teeth, gums overhanging and irritated, or with alveolar abscesses, and other pathological conditions that we so often see among those people, would be affected by phosphorus very much quicker than those with healthy, clean mouths. It is the healthy, clean mouth that they are attempting to obtain, but not by the polishing process further than the usual methods of removing calculi, broken teeth, filling cavities, and keeping the mouth in an ordinary hygienic condition. (Applause.)

DR. J. E. NYMAN, of Chicago:

I can not agree that the gentlemen are at all justified who state flatly that the disease known as pyorrhea alveolaris or phagedenic pericementitis, or whatever name you give it, is due entirely to local causes. Very often the local evidence is predominating, and the most marked that you can find in connection with the trouble. But, back

of it all a predisposing or systemic cause may have been a factor by inducing the local condition which is now the most manifest evidence of the disease. It is very difficult to state flatly and be sure of the position, as to whether the deposits are due to exudate which follows the inflammation of those peridental membranes instead of the deposit causing the primary inflammation. We have plenty of evidence that systemic derangements will cause peridental derangements. We find that manifested in the progress of tuberculosis and diabetes; and while speaking of diabetes I would like to call your attention to a very interesting pathological fact, namely, that if the diabetes be of such a nature that the patient lives beyond the probable period of life for that kind of a patient he is almost sure to develop cataract. Any oculist will tell you that there is grave danger of that in any diabetic patient. We know, too, that the administration of medicines containing mercury, when it has reached or passed the point of saturation, produces grave peridental inflammation, and that you get grave peridental inflammations from lead, iodide and phosphorus poisons.

With all these evidences of peridental inflammation which are induced by systemic conditions, I can not feel that any one is justified in saying that this disease known as pyorrhea alveolaris is always purely local.

Another factor which presents itself to dispute this is the fact that very many of these cases which do not improve satisfactorily under local treatment, no matter how thorough it may be, by putting that patient upon a strict course of diet, and by the administration of internal remedies a very marked improvement is readily manifested.

I have in mind a certain patient who has diabetes and pyorrhea. As soon as he becomes careless there is a marked aggravation of the pyorrhea, and also a marked increase of sugar in the urine, but upon placing him on a limited and strict diet an improvement in the peridental condition is immediately noticed.

I have another case in mind of a gentleman who suffers severely from peridental inflammation, with discharges about several teeth whenever he is careless, but when he takes some of the salicylates, in three days there is a marked improvement in that man's mouth. The very fact that the administration of systemic remedies has a marked

beneficial effect in the local region of the peridental membrane it seems to me is positive proof that we may have conditions there which we do not recognize.

We have been told that deposits must be thoroughly removed, yet their removal frequently leaves a condition that invites fresh deposits there. We all know that deposits occur more readily on roughened surfaces than polished surfaces. So I think it is essential that all surfaces which have been scraped should be polished as smoothly as possible. Dr. Smith has enunciated this fact time and time again. It prevents repetition of the deposit.

This is illustrated by experience with gold crowns. If the bands are carried to the bottom of the pockets and perfectly fitted and well polished, deposits will not adhere to the gold and the gums lying against them will be firm and healthy.

Beneficial results frequently follow the devitalization of certain teeth which are always sensitive to thermal changes because of the pockets formed or the recession that has taken place. The elimination of sensitiveness seems to result in a beneficial change about the tooth. The blood supply is then diverted to the peridental membranes, which are very much in need of nourishment.

Another thing which I think is absolutely essential is that there be correction of articulation and relative position in regard to proximal contact of the various teeth. We hear of cases of isolated pyorrhea, a pocket here and there in the mouth, and almost invariably I think those are due to neglect and irregularities of the teeth. It is quite essential that the teeth which are loose should be united to the teeth that are firm relatively, in order to secure immovability as far as possible.

As to the prognosis in regard to pyorrhea, I feel that it is analogous to the prognosis in a case of tuberculosis. If the disease has progressed for too long a time, and there is too much loss of tissue it is absolutely impossible to effect a cure, and we are foolish if we expect to do it, or give our patients assurances that such a thing can be done, and I think nine times out of ten the chances of saving the remaining teeth are enhanced by removing the desperate ones at once. We must impress upon our patients at the very earliest opportunity that they are in the preliminary stages of a very grave disease as far as their teeth are concerned, and that they must report regularly.

and follow our advice in all respects. If they are not prepared to do this, or fail to keep their promises, I will not have anything to do with their cases. They are charged a commensurate fee to impress upon their minds the importance of what I have done. I think it is a great mistake to charge a man merely for cleaning his teeth in cases of this kind. I haven't said anything about medication because I wanted to leave that subject to Dr. MaWhinney, from whose hands I have seen the most brilliant results I have ever seen in the treatment of this disease. (Applause.)

DR. ELGIN MAWHINNEY, of Chicago:

Mr. President, it is one of the advantages of being secretary that you are not expected to take part in the discussions, because the secretary's mind is usually occupied with things pertaining to that office, but I can not refuse to rise in response to the compliment of my friend, Dr. Nyman.

As most of you know, I have given a great deal of attention to the treatment of this class of diseases during the last fifteen years, and perhaps for the past five years, I have done more of that than all other things combined. I don't claim any special ability over that of many of my confreres who have been paying attention to it. If I have had some unusual results it has been due largely to the principles that have been enunciated here today. First, insisting upon the thorough coöperation and support of the patient. I will not take a case unless the patient will carry out my instructions absolutely. I can not afford to do it, and neither can you. Second, success depends upon clean teeth. I want to emphasize that because the teeth must be clean in all varieties of the disease. There are many of these cases that probably would be termed purely phagedenic pericementitis where there are no perceptible deposits; but after these years of experience I am prepared to say that you can not get results until you have scraped and polished the root, and in many cases scraped the alveolar socket. I do not agree with Dr. James that it is always a painless process. I think that my fingers are pretty well trained to the handling of scalers, and I know that it is not possible for me, except by local anæsthesia, to always accomplish this result painlessly.

In some particulars my work is different from that of other operators. One difference is that in all inaccessible positions I in-

variably pack the pocket first. I syringe it out and clean it antiseptically and pack it in such a way as to lift out temporarily the loose tissue, so that on future occasions I can see the surface that was hidden from me at the beginning. In those bad, inaccessible places I don't rely altogether on the sense of touch to know that the tooth has been cleaned and polished. There are many who criticize this proceeding, claiming that I am forcing away tissue which is already too far away from the tooth, but I maintain that if this can be done without seriously injuring it, and get the tooth surgically clean as well as the pocket, and then force back the tissue, I have brought healthy tissue down upon a healthy surface, and I usually get good results. I pack it away with gauze cut in such shape as to be most convenient for the desired position, and usually for the last five years I moisten it in a 25 per cent solution of pheno-sulphonic acid. This is not strong enough to be corrosive, but it is styptic and will control the bleeding. It also has a softening influence upon the calcific deposits. I have proved to the satisfaction of a great many who have watched it that it will dissolve deposits, and certainly in many cases where it was difficult to even scratch the deposits, so hard were they, before applying this treatment, afterward they could be removed very easily. Then if the case be one of extensive pocket, and by that I mean enveloping, perhaps, half the root of a tooth, I may keep it packed, and make it heal from the bottom as a surgical wound. Of course, if the periodontal membrane has entirely lost its attachment it will never be re-established, and the best we can obtain is a mechanical union. So I sometimes in these very severe cases keep the pocket packed until it heals from the bottom—in other words not to allow the gum to draw tight at its margin, leaving a large cavity above which is going to be filled with infective material, seeping in and retained there because of the hugging of the gum at its margin. I sometimes find it necessary to make an opening through the gum high up rather than to stretch it at its margin, and clean the place through that.

When all has been said it yet remains true that you never can succeed in treating these cases until you educate yourself to appreciate, first, the different pathological conditions that are manifested in the different cases, and second, train your fingers to clean the teeth.

I always insist on the patient's general systemic conditions being looked after, and the important things that must be kept in mind relate to perfect elimination. This oftentimes can be accomplished by simply requiring the patient to drink some good wholesome water, say eight glasses in the twenty-four hours, in addition to what is taken at meal times. I usually require such patients to eat large quantities of fresh fruits. Many times I find that is all the systemic treatment that is needed, in addition, of course, to the proper diet. Many times I have to resort to the salicylates, and sometimes iodide of potassium and some other agents which would naturally suggest themselves for particular cases.

I had occasion to emphasize the points that I deem important in regard to the treatment of these diseases in a paper read before the McLean County Society. I think those points stand good. It has been published, and you have perhaps seen it.

In regard to the local medication I do not use one remedy for all cases. For the most part I do not use escharotics or coagulating agents. I generally use stimulating antiseptics. Where there are loose, flabby gum margins I use astringent agents, and recommend the patients to use them. (Applause.)

DR. J. E. NYMAN, of Chicago:

I forgot to mention what I think is a very essential factor in the treatment of these diseases, and that is elimination of pockets. I frequently try the method which Dr. MaWhinney has suggested, of packing the pockets and allowing them to heal from the bottom, but if that does not succeed I will surgically remove all the gum which constitutes the pocket. I would rather have a receded gum, with the root showing, which I can keep clean, than to have a normally formed gum margin constantly showing new signs of inflammation.

DR. J. N. CROUSE, of Chicago:

I was one of the lucky ones to be invited to Dr. Smith's office when he was exhibiting the patients and the results of his treatment. It was a revelation to me to see so many mouths in such a perfect condition. I saw his treatment and I quite agree with the essayist that it is absolute cleanliness that produces the results.

Now if you don't know Dr. Smith you would not quite understand how he would be more successful than perhaps I would, or

some mild gentleman like Dr. Johnson. (Laughter.) I have known him for pretty nearly forty years, and was in college with him. He can not discuss a question five minutes without falling out with you.

When a patient comes to him who has not cleaned his teeth hell is to pay right away. (Laughter.) I will not apologize for that expression, as there is no other which will convey my meaning. The fire flies. We should see our patients more frequently. It is perfectly natural for them to get away and become careless, but if they are going to see you every month, and are going to be hauled over the coals every time they come they will keep their teeth clean, at least a part of the time. You get them educated to it. Since going to Dr. Smith's office I have had patients come oftener to be overhauled.

A boy came into my office a while ago with his teeth perfectly disgusting. I asked him what was the matter and if he did not brush his teeth. He said that he never did. I said: "Why?" He said: "I won't do it." I said: "You get right out of here and tell your mother that I wouldn't work in your mouth any more than I would go into a hog pen." I talked as rough to him as I could and got his mother on the telephone, so that she would catch him at the other end by the time he got home. (Laughter.)

That is about the way you have got to do with some patients. On the other hand take young girls, when they come into my office I am disgusted when they are not clean, and I make them feel as though I wanted to jump out of the window. This has its effect on them afterward. Take a child that won't use silk. I pass the silk between two teeth and say: "Just see what effect that will produce under your nose." Now I tell them that is only one place, and that they have twenty-eight places that will smell that way. That is pretty rough, but you must get it through their heads. I have accomplished more in such ways than by operations. I would have a large percentage of my patients come to my office once a month for a few minutes at least. I would advise every young dentist to adopt this system. The secret of success is absolute cleanliness and the necessary care of the teeth and gums to bring that about.

I have patients frequently who say to me: "Is there anyone who hasn't decayed teeth?" I say to them that I have one person right in the office who has never had a tooth filled. She has been

in my office twenty-eight or twenty-nine years, and has been my assistant. I attribute her absolute freedom from dental caries to her cleanliness. She never gets through her lunch without cleaning her teeth with the silk and pumice stone. She was a delicate child, but absolute cleanliness has been the means of preserving her teeth.

I quite agree with some of the speakers that there are some mouths that it is almost impossible to keep clean. They may clean them thoroughly at morning, and by night there is some accumulation there that is not natural. Those are unhealthy mouths. The thing to do is to try and get more vigorous digestion, and improve our patients in that way.

Now let us get back to the other paper. I want to describe three or four forms of that trouble—pyorrhea alveolaris, or whatever you may call it. I have some cases under my care now where there is constant wasting away of the sockets, and yet the gum tissue hugs absolutely tight. There is an atrophied condition of the periodontal membranes, and the gums recede to the very ends of the roots. I had one patient that I had not seen for six months. The socket of the third upper molar on the left side was gone, clear to the end of the root, and I took that tooth out. The next time the second molar was in the same condition—not a sign of a pus pocket, but the gum and alveolus wasting away. That is a definite form of trouble different from that form where there is irritation of the periodontal membranes, and a deposit as a result.

There is another form that I want to speak of. It gets down at the roots without any perceptible opening. I have never seen but three or four patients with that form of trouble, and those patients lost four or five teeth. Pus pockets formed in one case in three molar teeth, and we could hardly keep the patient in the chair long enough to take the teeth out. I could not find any break in the alveolus around the neck of the tooth. These cases are rare, but I have had two, and I think there are cases of that kind, where you can not find a symptom of destruction of the socket at the gum margins. I know there are men who will dispute that such a thing could happen, but I have seen it, and I would rather trust my eyes than any theory that any man can establish.

I want to speak of one other matter, and that is the removing of all the deposit around the root of a tooth. I think I am pretty

patient, but when I get through with some of these cases I don't know whether I have got it all away or not.

You have heard of the salt treatment, but I am going to give you a more radical one. A gentleman came to my office whose pocketbook was light. He is a good friend of mine. He got out of my hands for two or three years and came back with the six sockets of the lower front teeth nearly gone. I told him that the best thing for him to do was to get those out and have a bridge. He wanted to know if the teeth could not be saved and I said yes, I would fill them full of sulphuric acid and see what that would do. I took pure sulphuric acid and filled in around the teeth, with the result that those teeth are in there yet. (Applause.)

DR. A. J. ELMER, of Bloomington:

There is one thing that I would like to have answered before this discussion is closed. What is the cause and what is the cure of the condition that arises where we have aropy, mucous like saliva? I have been prescribing a mouth wash of limewater with more or less success, often less. We find this condition in conjunction, usually, with softening of the tooth structure along the gingival margins.

Isn't it a fact that we are as far from the cause of pyorrhea alveolaris as our brethren in the medical profession are from the causes of many of the common diseases that they are called upon to treat?

What difference does it make whether we know what the cause is or not? We have got cause and effect all mixed up. We have a flow of pus. That is the effect. We have a scale. That is the cause of the flow of pus. What is the cause of that? Possibly Dr. James is right when he says perfect cleanliness and the perfect removal of these deposits is the first and most necessary step in the treatment of pyorrhea alveolaris, but I am bound to confess to you gentlemen that in the space between the roots of the upper molars I am at a loss to get out all the scales and deposits. I have failed time and again. Some of you may be more expert in the removal of it, but sometimes I get it, and sometimes I don't.

I think you gentlemen know that the auxiliary treatment of pyorrhea must be indulged in by the patient. It is up to him when he goes home to do exactly what you tell him. How many of them

do it? How many of Dr. Crouse's patients, or yours or mine will come back to you weekly or monthly? (Applause.)

DR. TRUMAN W. BROPHY, of Chicago:

Mr. President, the two papers do not deal with the same subject, and consequently it is not easy to discuss them under one head. I fully agree with Dr. Rohland on the general subject of oral prophylaxis. That is the leading subject today in the treatment of human ills. The topic that is claiming the attention of medical men everywhere is preventive medicine, and there is no portion of the subject so important as oral prophylaxis. Unquestionably the mouth is the greatest center of infection. Through the medium of the oral cavity infectious diseases are carried into the stomach and lungs, and so on through the general circulation; consequently the subject which we are discussing is the most important one before the dental and medical professions at the present time. Medical men have learned that the infections of the oral cavity have so much to do with the lowering of the vitality of the human family that today they are teaching oral hygiene to their patients. Were it not for the fact that this subject more than all others claims our attention we would not see so many members of the dental profession assembled here today.

The increase in the demand for dental services I believe is largely due to the consideration of oral prophylaxis and the adoption of proper measures to bring it about, hence the dentist is called upon to treat patients who formerly did not come to him at all except when driven by pain. Now they seek the services of the dentist for good advice, and get it.

As to the next paper, that of Dr. James, in which he speaks of pyorrhea alveolaris, I wish to say that I think that term means nothing. You might apply it equally as well to pus flowing from the alveoli of the lungs or kidneys, or any other part of the body where there are alveoli. You must make use of an adjective to describe the kind of alveoli involved. If it flows from the alveolar process it is simply a phenomenon. It does not imply that we have a disease at a certain point, of a certain character. Equally bad as that is the name "peridental membrane," for there is no such membrane. The only thing that could be called the peridental membrane would be the dental follicle. If we want to be exact the term must be discarded, because it does not imply what we mean.

The better name was employed before, namely, pericementum. There is a membrane that surrounds the cement, but there is no membrane surrounding the tooth, so there is no peridental membrane.

This term, pyorrhea alveolaris, so-called, is always being discussed. There is a name that applies to the condition which is in accord with the nomenclature of pathology, and that is, dental alveolitis. This name agrees, especially in its terminus, with all the other names which refer to inflammations that occur in different parts of the body. You can not by the use of a name describe all the morbid phenomena through which the disease passes. If it were so we would need only dictionaries in acquiring knowledge. We need volumes descriptive of the different conditions in order that we may understand what the author means. I always feel like apologizing when I use the term pyorrhea alveolaris, because it does not mean anything except the flowing of pus from alveoli. This condition is the result of inflammation and is always made worse by a low state of vitality of the patient, so I can readily see how a gentleman like our eloquent friend from Chicago, Dr. Nyman, can regard this as the result of some systemic disturbance because a systemic disturbance and the local condition are so closely allied that it is hard to tell which takes precedence. These conditions grow worse when the vitality is lowered from any disease. In typhoid fever you will find that the conditions are always worse. The lower the vitality the more pus there will be about the teeth. When a patient is brought out of sickness pus formation will, in a measure, terminate. Consequently I can readily see how, in the case of a person suffering from albuminuria, or diabetes, or any of those diseases, we could presume that the disease is due to the systemic condition rather than having been aggravated and made worse by it. (Applause.)

DR. ROHLAND (closing the discussion) :

I did not mean to create the impression that the method of cleaning the teeth instituted by the Diamond Match Company was the method employed by Dr. Smith. If that impression was made it was not what I intended to say. The point I wished to make was that the process as instituted by Dr. Smith is only more thorough than the processes that have been usually employed before, and I presumed that the treatment employes of the Diamond Match

Company received was just along the usual lines; also, if the results that followed that treatment were so marked, what would be the results when the treatment was as thorough and frequent and as systematic as that advocated by Dr. Smith. That is the reason I referred to the experience of the Diamond Match Company. (Applause.)

ANNUAL MEETING OF THE AMERICAN DENTAL SOCIETY
OF EUROPE HELD AT GENEVA, SWITZERLAND,
APRIL 21, 22, 23, 24, 1905.

DISCUSSION OF THE PAPER BY DR. SPAULDING ON "SOLBRIG'S PORCELAIN
JACKET CROWN."

DR. L. C. BRYAN (Basel)

Said that with regard to setting the caps on living stumps it seemed to him that an incisor tooth crowned as in the example shown would be affected by the acids in the cement. He drew attention to the fact that he had been recently trying Evans gutta percha cement, which was non-irritating, very sticky, and seemed to be exceedingly lasting. In connection with the process described by Dr. Spaulding it seemed very desirable to use something non-irritating, such as the cement he had named. Dr. Patterson, he believed, had tried it largely, and it was he who recommended it, and perhaps Dr. Patterson would be good enough to say what results he had achieved. The accidents which occurred to living teeth when crowns were set with cement were well known to all, and anything that would relieve the danger of the pulp dying under a tooth so severely ground as was necessary to make a cap overlie, would be a great boon, and he believed in that connection the gutta percha cement would be appreciated as a non-irritating substance.

DR. N. S. JENKINS (Dresden)

While deeply appreciating the honor of opening the discussion upon Dr. Spaulding's valuable paper, almost regretted there was so little in it to criticise. To elicit an active discussion an essayist should present controversial matter, and here there was only room for commendation, with the possible exception of "the matter of strength."

No doubt the crowns were as strong as they were beautiful, but the cases to which they were adapted were limited, and, where they were impossible, given a reasonably firm root, a porcelain crown upon a proper platinum basis, was sufficiently strong for any emergency. It required, in order to make a natural and enduring crown, not only concealment of the mechanical method, but also an indestructible foundation. That was obtained under the conditions which made possible a jacket crown (than which there could be no more perfect substitute for the natural organ) to absolute perfection upon the system the essayist had presented. But when that system was not applicable, an equally successful result could be obtained through other methods. It required only the intelligent application of the various alloys of platinum with iridium to supply a basis on which porcelain, in its various forms, could be worked with complete reliability. That combination of platinum, iridium and porcelain would give the highest results, even in most obscure and difficult cases, and make subsequent fracture or decay practically impossible. The question of priority was often puzzling. It invariably happened that many minds were working upon the same problems at the same time, and the usual result was that several separate and distinct discoveries of the same fact were made almost simultaneously. There could, however, be no question of the great debt owing to Land and Rollins, who, long years ago, when the time was not yet ripe to receive their message, insisted upon the possibilities of porcelain restoration, and, in the earliest work of Land, the principle of the jacket crown, although partly upon a platinum base was, Dr. Jenkins believed, announced. Last summer he saw in the practice of Dr. Capon, of Philadelphia, most beautiful and practical all-porcelain crowns, and understood him to say he had been making them for a considerable time. But, in any event, dentists were under obligations to both Dr. Edward B. Spalding, of Detroit, and Dr. Oscar Solbrig, of Paris, for presenting so great an improvement, and to their fellow member, Dr. J. H. Spaulding, for the clear and concise manner in which he had explained the operation. It seemed to Dr. Jenkins that Dr. Solbrig's method of forming the root, avoiding a shoulder and carrying the porcelain to so fine an edge under the gum, had much to recommend it. He followed his plan in a

recent case, where incipient pyorrhea had somewhat loosened the root, and found to his delight that the gun took most kindly to the porcelain edges and festooned over them so tightly that all danger of recurrence of the disease seemed, after the usual treatment, to have disappeared, for the root had become as firm as ever. In conclusion, he asked Dr. Spaulding whether he had observed similarly favorable results in complicated cases. Instead of pieces of spunk to hold the gold foil in position during the forming of the matrix he had found discs of chamois skin more satisfactory.

DR. GEORGE O. WEBSTER (Berlin)

Said that as early as 1889 or 1890 he was associated with Dr. Capon in college work, working under the Land method, and very soon afterward, immediately on his return to his own practice, he began the use of the porcelain jacket made on the platinum base. In his own case—and he was sure it was the case with many others—he found that while from an artistic standpoint, and particularly in the case of the so-called peg laterals occasionally found, they were beautiful, yet where there was very much mastication upon them they were not strong. The experience of a good many friends coincided with his own, that while at times they lasted well they were not a strong piece of work. Dr. Spaulding must have had a large experience in the use of the jacket crown advocated by Dr. Land, and perhaps he would state whether he considered the present method stronger than the one which was used, and probably was used now, by Dr. Land in the placing of the porcelain upon the platinum. If it was stronger it was, from an artistic standpoint, very much superior. Having regard to the fact that just under the gum line there was very often a blue discoloration caused by the platinum, if equal strength was obtained with the new method it seemed to him that from an artistic standpoint it would be a most delightful method.

DR. W. A. SPRING (Dresden)

Asked whether the platinum remained.

DR. WEBSTER

Said it did.

DR. SPRING

Said a number of years ago Dr. Capon showed him crowns of that sort. He used a strong piece of platinum which remained. He

had seen recently one of the so-called Spaulding crowns made on the American Spaulding method, and it was very much like one which had been exhibited, made on a platinum matrix and then the matrix removed. It had a shoulder. The claim was made that it was an exceedingly strong crown because of the cement; that one of the crowns once set with cement a tooth could be used with safety. He believed himself it was a very strong crown if set with cement, but feared that the same crown put on with the Evans gutta percha cement would not prove strong enough. It could be easily understood that the thickness of porcelain at the back, where occlusion occurred, was necessarily very small. One thing which he believed would be an advantage in a crown of that kind, if made with a facing, was the facings which were made by the Consolidated Dental Manufacturing Company. They were beautiful and thin and all ready prepared, and there was no necessity to stop to grind the tooth down. They were very artistic and translucent.

DR. L. J. MITCHELL (London)

Remarked that in October last year he had the privilege of attending the meeting of the Jersey Central District Society, where a demonstration was given by Dr. Hervey, of Detroit, of a crown that had been made, and he believed had been in active use in his practice for somewhere between nine and ten years. The crown differed from those shown by the essayist only in the fact that in making the matrix for the crown, instead of making the joints and breaking them up anteriorly and posteriorly, they were made laterally. If made in the other way more of the tooth had to be ground out for the face than was otherwise the case. It was a question of saving space. Dr. Hervey also advocated a shoulder at the gum margin. Having tried the other it had been discarded owing to the fact, as he noticed even among some of the specimens shown by Dr. Spaulding, that the thin edges very soon went. With a shoulder it was claimed from experience that it afforded the greatest assistance; the neck of the crown remained the same, and there was less irritation of the gum the fewer particles of food were gathered. Originally the platinum was left in as Dr. Webster suggested, but owing to the line that was shown they discarded it because it was not necessary and also because they had a much firmer attachment with the porcelain

than with the platinum. With regard to strength Dr. Hervey told him that they had had that crown in place under observation for between nine and ten years. There was certainly nothing new about the method now shown, and he believed there were more of such crowns made and put in in and around Detroit than in all the rest of the world put together. It was very gratifying to have the matter brought before the society again, because it enabled a number of people who had not adopted the method to take it up and in the future something even better might be invented than was in existence at the present time. Dr. Hervey assured him that there were more crowns broken made in the ordinary way than under the new method. It was, of course, very much better to have a crown broken than have a root split, and that was one strong point in favor of such a crown as had been described. Unfortunately, in a great many cases which came before the dentist the teeth were broken level with the gum or caries had set in, and it was not possible to save very much. Of course, the method had the limitations Dr. Jenkins had suggested, but on the score of strength the crowns were perfectly sound and there was no question of their artistic appearance.

DR. W. A. SPRING

Said that as Dr. Mitchell had referred to the crown used by Dr. Capon, he might mention that in the crown Dr. Webster first referred to the platinum was a tube of 28 gauge; it was ground down distally, and on the front side a facing was attached by porcelain, the whole of the back being platinum. The essayist had spoken of the necessity of having the patient come back once or twice for the refitting of the platinum foil. To his mind it was not necessary to have the patient come back if the patient was willing to remain on the first occasion for an hour. After trimming down the enamel the platinum could be put on the stump, and one bake of high fusing porcelain put over the platinum foil, and one burnishing was quite sufficient. The crown could be made up with high fusing porcelain, even without a facing, and the burnishing could be accomplished at least thirty minutes after having begun to fit the platinum, and there was no need to ask the patient to come back for that operation.

DR. JOHN W. GALE (Cologne)

Asked Dr. Spaulding whether, in cases of operations requiring so much grinding of live teeth as appeared necessary under the method he had described, with the present understanding of asepsis and immediate pulp extraction, it would not be a more merciful operation to remove the pulp and fill the root at once and do away with that danger? It appeared to him that with the patients he had to deal with to grind a tooth in such a manner would be almost impossible in a great many cases. The fact that the thing had proceeded so far before an operation was necessary made it quite certain that the pulp was largely withdrawn from the crown, and many were so sensitive that it seemed to him a great advantage to take the pulp out at once and fill the root.

DR. W. MITCHELL (London)

Desired to add his testimony to the beautifully artistic results obtained with the method. Some reference had been made to the Land Jacket crown. In 1884, 1885 and 1886, he carried out some experiments in connection with the jacket crown, but with the matrix left in and the porcelain baked on platinum. The difficulty he had where there was a live tooth involved—and those were the only cases he was able to try it upon—was the fact that there were two things which modified the situation. One was his inability to grind the tooth down satisfactorily so as to get it in a reasonably normal shape when completed, and the other was to overcome the visibility of the platinum through the porcelain. It gave a blue line at the neck. He had to contend with the death of one or two pulps, but he imagined that that was principally owing to the trace of arsenic which it was almost impossible to remove from the cements. Some considerable discussion took place on that subject some time ago in the dental journals, and it was said that nearly all cements contained more or less arsenic. Where there was such a great amount of the dentine exposed as was necessary in these cases, he thought the more merciful way would be the immediate extirpation of the pulp. With regard to setting the crowns with gutta percha, there was no reason why it should not be done, but it would not be so strong he believed as with the cement, because it would not make such a non-resisting joint. From the artistic side it appeared to

him to leave little to be desired. With regard to strength, he thought from the shape the average crown took, unless it was a very flat surface exposed to a bite on the lingual side of the tooth, it would be very strong. Of course, the operation, like a great many others, was not applicable to every case. There were cases where it would be of the greatest possible advantage, and he congratulated Dr. Solbrig on having found a method of obtaining such beautifully artistic results. He had given the dental world something which, he thought, would be a useful adjunct to its work.

DR. N. S. JENKINS

Observed with reference to the danger to the pulp that there were unquestionably many instances where it was most desirable to devitalize and remove the pulp, and under modern conditions it was a simple operation, the result of which was very evident. But there were cases where it was desirable to preserve the pulp alive, and in those cases where he had found, after grinding and preparing the stump a certain suspicious degree of sensitiveness remained, he had adopted the practice of isolating the stump with a rubber band and painting it with a strong solution of nitrate of silver. After a few minutes it had produced a protective effect, and when subsequently covered, whether in such a crown or in a bridge or in an ordinary cap crown, with phosphate cement, it seemed to him absolutely safe against future accidents. A very great advantage in the system presented by Dr. Spaulding was the fact that the matrix could be made with gold foil. That was a principle which he stood upon, although there might be men so skilful that they could get an equally good impression of such a case with platinum foil. He himself had never seen so good a matrix made even by some of the most renowned masters in the porcelain art as those same men could have made with gold. It was for that kind of work a matter of very great importance to get a perfectly accurate representation of the root, and he claimed that that could be obtained with gold foil to a degree which was not equally possible with platinum foil, admirable as platinum foil was for many purposes.

DR. E. DANE BARROWS (Berlin)

Asked whether nervocidene had been used, and with what effect.

MR. ADOLPH WETZEL (Paris)

Said that whenever he heard of porcelain jackets he always wondered how the teeth were reduced without giving the patients a great deal of pain. With his own patients he had the greatest difficulty. A few weeks ago a friend of his spoke about having made a porcelain inlay for a patient, and in doing so he used a syringe, the invention of Dr. Meyers. By the use of that syringe Dr. Meyers injected a solution into the dentine and was able to take away the sensitiveness of the tooth to such an extent that he not only exposed the pulp, but was able to remove the pulp immediately. If that method could be utilized without any danger to the pulp, porcelain jackets might be made without any pain. He desired to know whether any of the members had used Meyers' syringe with success and without injury to the pulp.

DR. G. O. WEBSTER

said there was one thing that struck him particularly with regard to the remarks of the last speaker, and that was, that often one important factor was lost sight of. Admitting it was true that nervocidene, or any other agent of the nature under discussion, benumbed the pulp to such an extent that one could cut liberally, what would be the condition when the effect of the remedy had disappeared? The question was whether there was danger of subsequent irritation where any medicinal agent was used, or from the cement, and in that connection even cataphoresis could be taken into consideration. Taking as a case in point a live tooth and using an agent to permit cutting it down, and comparing that tooth with another which one could cut normally without giving pain, was there not an immense danger of subsequent trouble in the former case?

DR. W. M. GRISWOLD (Hamburg)

After expressing the pleasure he had derived from seeing the specimens, said that five or six years ago at Brussels, Dr. Barrows had produced a number of teeth with as much enamel replaced as on the teeth now shown. One of the tests with regard to strength then made was the cementing of a bicuspid crown and driving it into the end of a pine stick without breaking it. He thought a tooth of this kind was quite strong set with cement.

DR. E. F. DAY (London)

Considered that the sensitiveness of the dentine in cutting down teeth in the way described by the essayist was a very important point. He had not done any of the kind of work shown, but for the preparation of very bad erosion cavities, and cutting down the tops of lower teeth in cases of protrusion, where the lower teeth were biting forward, and in preparing very sensitive teeth he had used a spray of ethyl chloride. By the use of ethyl chloride he could produce in about half a minute an anesthesia which gave him time to prepare his cavity and do anything which might be required, such as the cutting of points or grooves. After putting on the rubber dam and isolating the tooth, he held the spray of ethyl chloride for a few seconds and then with his engine ready made his grooves. It could be done absolutely without pain on the most sensitive teeth, and he had even extracted pulps under the treatment. He had only used it for three or four months, but where he had used it it had been most useful and was really the best thing he had tried. He also used it for preparing crowns. If he had to fit a gold crown without devitalizing the tooth he just sprayed and trimmed the tooth and was able to take off the bulbous portion without any pain at all.

DR. WILLIAM HIRSCHFELD (Paris)

Pointed out that the discussion had developed into a discussion upon methods for the treatment of sensitive dentine. In that connection he had prepared a special paper, and he thought it would be better if the president limited the discussion at present to Dr. Spaulding's contribution in order to avoid going over the same ground twice.

DR. H. J. MOORE (Frankfurt)

Suggested that in setting the crowns, before the cement was used, the stump should have a little copalene varnish brushed over it. He did not think it would make any difference in the setting of the cement, and would prevent any bad action of the acid or arsenic that might be in the cement.

PROF. W. D. MILLER (Berlin)

Said that with regard to the action of the acid he should like to endorse what Dr. Jenkins had said about nitrate of silver. A coating of nitrate of silver gave dentine a much higher resistance to the action of acid than it normally possessed. In phosphate cement there was a

minute trace of free acid and a coating of nitrate of silver was amply sufficient to prevent any deleterious effect. When using a preparation of oxide of zinc, which sometimes contained traces of arsenic, nothing would prevent the destruction of the tooth in course of time, but as far as acid was concerned nitrate of silver furnished complete protection.

DR. GEORGE MARTIN (Berlin)

Said that in using jacket crowns at the cervical margin, with thin crowns and a coating of nitrate of silver the tooth would be stained dark, and would cause the cervical margin to become discolored.

DR. J. H. SPAULDING.

In reply, said that with regard to Dr. Jenkins' suggestion as to the use of the crown on teeth affected with pyorrhea, he had no experience of making them on stumps affected in that way, and therefore could express no opinion on the result, except to say that he had noticed that the gum closed in very closely and firmly over the cervical margin of porcelain crowns. That would appear to confirm the great toleration of the gum for the presence of porcelain and its advantage over anything that was metallic. With regard to the building up of the crowns on the platinum base and leaving the platinum in, there could be no question but what the crown was many hundred per cent stronger cemented on the stump directly with the cement, than it was having a medium of platinum between the cement and the crown; in other words, the porcelain would adhere more firmly by the medium of the cement to the stump than it would adhere to the platinum. Porcelain did not stick to platinum very strongly.

DR. G. O. WEBSTER

Said the point he wanted to inquire about was not so much the strength of adhesion of the jacket to the crown as the fracture of the porcelain itself.

DR. SPAULDING

Said there was nothing made in porcelain but what would fracture. No matter how thick it was or what porcelain it was made of it was bound to be fragile. No matter whether it was an ordinary pivot tooth or on a bridge, a porcelain facing was likely to chip off. What he claimed was that when the interior of the crown was suitably and properly etched with hydrofluoric acid it left a rough surface, and

great pains should be taken in mixing the cement, and putting it in, and setting the crown, to be sure that the cement had thoroughly taken hold of all the inequalities of the porcelain as well as of all the inequalities of the stump. He took a wheel bur and made little rough places on the stump itself, in order to get an added strength of attachment by the cement. With reference to the strength of the crowns, of course he had not been making them so long as nine or ten years. He had occasion to remove a tooth within a week of putting it on—he put it on supposing the tooth to be a live tooth, there being a little sensitiveness in it and no apparant exposure of the pulp; the mouth of the patient was in a bad condition. Four crowns were made for that particular patient, and the patient had a little pain after the setting of one crown, and he had to take it off. He got it out without any difficulty, but it was not so easily got off as one might imagine a thin coating of porcelain would be. It was a very thin crown. He made grooves in it and split it off, but it held pretty firmly and that particular one was not etched with hydrofluoric acid. He was convinced that the washing with hydrofluoric acid would add to the strength of the attachment of the crown. With regard to destroying the pulp, that was a matter for the judgment of the operator, and it could be easily done. Even for a tooth that had no decay in it, it was simply a matter of deciding whether to destroy the pulp, and leave the tooth there to maintain the strength of the porcelain crown. To strengthen the tooth it was only necessary to cement a platinum pivot into the place from which the pulp had been removed.

On motion of the president, the thanks of the society were accorded to Dr. Spaulding for his paper.

CHICAGO DENTAL SOCIETY.

A regular meeting was held March 7, 1905, with the president, Dr. Thos. L. Gilmer, in the chair.

Dr. Edmund J. James made an address entitled "Dental Education."

[Dr. James' address was spoken from notes and he has found it impossible to reproduce it for publication.]

DISCUSSION.

DR. DON M. GALLIE:

The first question Dr. James brought up was that of the law and the relationship of the law to the different professions and to the country in general. That is something we must consider. We found that at the last session of the legislature, when the matter of certain requirements came before it, there were a few who asked some very embarrassing questions. Fortunately, conditions are developing, and the time is not far distant when we can depend on the men who go to the legislature or to congress. They will be of such a caliber and standard that we will not receive a setback from that direction.

In our bill presented to the last legislature we had a clause that specified certain requirements, regardless of whether the candidate is from this, that or the other school. Some very able men, graduates of state universities, made objection that it would not be fair to the graduates of the university from our own State to take an examination. However, they waived that when it was made plain that all were being treated alike. We have every reason to feel pleased now with the outlook. With the reorganization of the profession in the State, no legislative body can fail to give us the support we are entitled to.

Dr. James spoke of having uniform laws throughout the country. If we had such laws as far as qualification for our entrance and graduation are concerned, it would be better. If we also had our state boards appointed in such a way that we could depend on them, and know that they are doing their work in the interests of the profession and in justice to all concerned, we would have still greater hopes of bringing about a satisfactory condition for the profession as well as for the people.

No one questions the fact that medicine has made gigantic strides in the last few years. The splendid laboratory work, and the study and advancement in regard to preventive medicine and knowledge of the life of bacteria, and the fact that we have some hope of overcoming the ravages of tuberculosis, all go to show that the medical profession has made progress. It has made these strides because it has raised its standards, and consequently the man who enters the medical profession has a mind that is trained, a mind that can compre

hend and grasp the many problems that are connected with the science of medicine.

So we hope that the profession of dentistry, a kindred profession or a specialty in medicine will also advance and develop. We are making, in our way, just as great strides as the medical profession and today our schools are turning out better men than ever before. We hear it said that the graduates of today are not able to fill teeth; are not qualified to handle patients as the men of twenty-five or fifty years ago. That is not true. I feel certain that the men we are turning out today are better than those turned out before, because the time spent in college, the subjects studied, and the educational benefits they received are such that they cope with the work better than the men who took a six months' course in college and then went out to practice.

As to the question of a standard. Dr. James spoke of a scientific, a liberal and a special education. The question is what will we consider a liberal education. He suggests that the ideal is a four years' high school course, then four years in college to be followed up with a four years' course of study in the chosen profession, making twelve years in all. That is ideal, but is it practical?

Our boys get into the high school at fifteen; add twelve years and they are twenty-seven before the graduate. Many can not do that because they have not the money. Of course, if we had a law demanding it, we should say that the entrance qualification should be a high school diploma. Who is going to judge that the young man's education is the equivalent of a high school education? As it is now, deputy examiners pass on the qualifications, but we can not depend on that.

A man may go to school four years and graduate from the university a philosopher, the best scientific student the university can produce, and yet when he takes up the study of dentistry where is he? He may not have the manipulative ability. If we could have him do special work along the lines of manual training it would be better. However, we are progressing. In the public school, in the seventh grade, the boys start in at manual training, making all sorts of things. That is continued in the high school, so that our boys acquire finger skill: their minds are educated to evolve original ideas, along the line of mechanics, and that kind of education is far better

for the young man contemplating the study of dentistry than four years of work along scientific lines suggested by Dr. James.

Our dental students should do more technic work. A good deal of their time is lost standing around with nothing to do. If we could put them to work making all sorts of appliances used in dentistry we would be doing them a great service and that kind of an education would be far better than a scientific education.

DR. G. V. BLACK:

The address was an excellent one and well timed, and I agree with the sentiments expressed. In fact, I have very little to find fault with, but almost everything to commend. Dr. James has given us some thoughts that are very apt and pertinent at this time, when we are trying to lengthen our course of study, as is demanded by our people who are requiring more and more the services of a dentist. As this demand is increased, and our power of serving the people well is increased, our standing as a profession also increases.

One thing which interested me very much and which has been on my mind a great deal of late is what Dr. James said about the different standards of education in different states. It is well known that some of the Southern states are not prepared for the same course of education as we are in the North, although there are regions in the South as well prepared as we are. It seems that their facilities for a primary education are not as good. The demand for educated dentists is not as great as with us.

In the National Association of Dental Faculties it has always been the scheme to have all the schools working on the same grade, no matter where situated in the United States. The association by a great majority voted for a four years' course. It afterward fell down. This course was voted when we had a boom in dental education. That is over now. Those schools which felt they were losing students by the four years' course believed they could not stand the strain. May be they were right, and may be they were wrong.

One man in the South wrote me recently that it was impossible for his State to support a scheme of uniform requirements proposed because they did not have the educational facilities. There are only seven high schools in the whole State. This is a difficulty we have to face considering a scheme of dental education as national, and that is the way it has been considered by the faculties association.

If the boards of examiners can evolve a better scheme than we have evolved, one that will hold together better and give us better work I shall be very glad. If they do well I hope the profession will stand behind them.

When Dr. James said that the best course of dental study is the longest course of study that will continuously improve the average candidate for the practice of dentistry, regarded from the standpoint of primary and professional education and technical skill, he gave us something to think about. It is worth studying well and with care. Of course, there are great differences in men, but when he said the average candidate, he limited it properly. We can not set up a scheme that will be best adapted to the brightest men and try to force all others up to it, and yet we must not allow the average man to be of too low a grade. His primary education ought to be up to a certain standard; he ought to show certain aptness in educational and technical matters, and our average man ought to be a good man; a strong man in most directions.

DR. C. R. E. KOCH:

In common with the previous speakers, I wish to express my great delight with the excellent address given us by Dr. James. It is an encouraging sign for the dental profession that prominent educators like Dr. James are taking an interest in its welfare. I think, however, that he was misunderstood in several of his statements. Dr. Brophy cites him as saying that dental education in Europe is ahead of that in this country. Dr. James spoke of medical education and did not touch on dental education at all.

The other proposition is Dr. Brophy's remarks about the South. I do not think that Dr. Black made any animadversion on schools of the South and southern conditions. The State of Pennsylvania is on the same basis. Those are conditions we must meet as everything else has been met—in time.

Dr. James made one remark from which I take great encouragement. I was proud to hear him say that Chicago can become the nucleus; that we shall send forth the standards of education in dentistry. I think Chicago has already done that. We have taken the lead, and I am very proud, indeed, that the three Chicago schools have approached this matter in a feeling of fraternity, fairness and equality, without any question of gain or loss. The only point in

view was to further dental education and to set a pace; and if the Chicago schools remain true to each other, and if the profession supports them, they will accumulate force and strength.

So far as the dental boards are concerned, and the two associations that control this matter of education, I believe they are both necessary. Both have done great good; one has been a check on the other. The faculties association concluded that one thing should be done, and then did not do it. The examiners' association accepted their dictum and agreed to gauge us by the measure we fixed. Recently the faculties' association set up a new measure without saying anything to the other great body, which now refuses to accept the changed condition. This association determines the reputability of colleges, and, therefore, has great influence. Some states, in their laws, recognize the faculties' association and say that schools which belong to that association are reputable; and Louisiana and New Mexico say that any school recognized by the National Association of Examiners is reputable. We must recognize such things because they are the law.

Our product will be recognized everywhere and we are interested to see that the various states so harmonize their laws as to make us able to say to our students that they can go anywhere, provided they produce their diploma.

DR. B. J. CIGRAND:

Dr. James has brought to us an earnest message, which summed up is this: "Dentistry must raise its standard of education; Chicago shall be the center of dental progress." Both the associations referred to are necessary now, and will be more so in the future. The National Association of Dental Faculties has done more for the profession than it receives credit for. It has prevented the growth of the night-school and the mushroom-day-schools and has evolved our present praiseworthy professional career and seeks to advance our calling. Both associations are creditable.

If we are going to better the conditions of the dental profession then let us adopt a rule they have adopted in many institutions in France and Germany. There is a music school in Munich which accepts advanced pupils and no matter where the pupil has taken academic work, when he matriculates in this school, he or she are probationers for one year. If they do not make sufficient advance

in music in that time they can not remain in that college. When we arrive at a point where we have a probationary course in dentistry we can assure ourselves that all those who are permitted to continue in college are well equipped to enter the practice of dentistry. What is true of music is true of art. Regardless of the student's literary qualifications he must possess digital and manual dexterity, even ambidexterity will be valuable. A knowledge of calculus, astronomy and kindred sciences will be attributes to his professional equipment, but without skill and manual ingenuity he will be a pronounced failure in dentistry.

I enjoyed this address very much and for two reasons. First, because the author dealt with the subject in a fearless manner indicative of deep interest; and secondly, it was filled with splendid advice in the form of criticism rather than a question of fault finding. A criticism, when properly directed, is always a benefit, and we ought to take advantage of the situation, especially because this criticism freely coupled with commendation comes from President James, a man of experience, who realizes fully what is needed most and what will do good. I believe it is universal throughout all educational institutions of this country that more attention is being given to manual work. The states of Illinois, Wisconsin and Massachusetts are cutting down the theoretical work in the public schools and are giving more attention to the manual side of things. If we will take the cue from this and cut down on the theory, incorporating more digital work in our curricula we will get better results. At present we are devoting too much time to theoretical subjects which ought to have been mastered before entering a dental college. We ought to be giving more time to the subjects that beget dexterity. We have hitched more to our courses than we can pull and I heartily agree with Dr. James that the elementary sciences should be fully understood before pursuit in professional work is contemplated. The sciences, classics and most of the culture must be pre-professional attainments.

It is well to approve of high ideals, and it is a blessing to us to have men like Dr. James lift us up and give us courage; his address must serve as an inspiration to us all. He does not mean that all shall take place tomorrow; no, he means it shall take place at some future day.

The idea of having a class graduate as an army is also a mistake. What Dr. James meant by a continuous course was certainly misunderstood. I inferred that he meant that the boy shall stay in college until he knows the subject of dentistry, and that students shall pass out as fast as the faculty believe they are equipped and accomplished. Not as an army, to march out on a certain day, but they shall go out as the faculty decrees they are ready or prepared.

Further, do you think it right that students shall say that although they must not fail in operative or prosthetic dentistry, yet they can fail—they have the privilege and right to fail in bacteriology and histology or other subjects not strictly dental? I say that is a mistake. A student in order to graduate should pass every branch of the senior curriculum. As long as we have loopholes thus big, we cannot expect to get the finished, perfected product that our profession demands. Besides it subordinates these branches and begets indifference culminating in disregard.

DR. J. N. CROUSE:

I would emphasize what Dr. James said with regard to passing a man when he is qualified. If a man can fit himself for practice in two years, there is no reason why he should be kept with the drones who must take four years for the same work. I am not saying that many can qualify in that length of time, but if they can they should not be held back. The law is that any one who can pass the board examination must be given a certificate to practice. It is not the diploma but the education that counts, and it is wrong to send them to college or to accept them after they get there if they want only a diploma and not an education.

DR. T. W. BROPHY:

If I had been able to suggest my views to Dr. James, he could not have expressed them more accurately because he has stated exactly what I believe, barring a few views in which he is mistaken. He is mistaken in saying that the members of dental schools abroad require the same standard of education for admission to the schools of dentistry as they do to schools of medicine. The requirements for admission to the schools of medicine are higher. It is a fact that the great educator, Hesse, of Liepsic, has deplored this, and at the last meeting of the educational committee at Stockholm a proposition was

offered to raise the standard of admission to dental colleges to an equality with admission to medical schools.

It is beautiful to theorize; it is delightful to discuss ideals; it is beautiful for a great educator to talk about a scheme by which men may attain to the highest plane. We enjoy such thoughts. They are elevating, but when we come to the stern realities of life, and discuss propositions which we may place on a utilitarian foundation and then bring them into actual use—that is another proposition.

The men who stand highest in their examinations, and who are expert operators and manipulators, pass out with less anxiety on the part of the teacher than the men who are at the foot of the class. Is it the State board that catches these men? Not always. That kind of a man, provided he has a good education, is capable of writing a fine paper and promptly answers questions, and shows a capacity to do certain things passes; while his brother student, who is vastly superior in many ways, and who the faculty found to be the better man, a safer practitioner, is not infrequently found wanting in examinations of the board. That is a serious question. How to do justice to everyone is a serious matter.

There is no position that requires a greater degree of care and requires greater responsibility than that of the teacher whose duty it is to determine whether this or that man is qualified to assume the responsibilities of a dental practitioner; and when it comes to the board, it should most seriously consider every phase of a man's make-up, and determine whether his education is sufficient to prepare him for the duties of a dental practitioner.

Education must be a growth. Any scheme for the elevation of the profession which is not based on a gradual process of elevation by which the growth begins from the bottom, and gradually proceeds to full development, will be a failure. Any scheme which demands a standard so high that it can not be reached from below, from that which is, will be a failure. The people must know that such demands must be made and have been made in order that young men preparing for their life work may so prepare themselves that they will take hold of their work and bring it up to the proper standard. I believe that if this question is placed on a substantial foundation, and is well understood, there will be no controversy or difference of opinion

among men interested in it as to how to continue this work, and as to how to continue it harmoniously.

Reference has been made to the South. Dr. Black said that one State had only seven high schools. Some States have not any. What are you going to do about it? The difficulties of the faculties' association are not of now or three years ago, they antedate almost the present decade. It began at Old Point Comfort. When at Saratoga Springs we wanted two votes to maintain the count system and the standard for admission to schools, two schools failed us, and I am not violating any confidence at this time by saying that these two schools were Harvard and Minnesota. The whole question of dental education was thrown into confusion. The boards lost confidence in us, and litigation resulted, because of the failure of these universities to do the proper thing at the proper time. Do not talk about the South standing in the way, when we in the North must take it to ourselves.

We have had for four years on the books of the faculties' association a resolution calling for high school graduation for admission to dental schools. It has never been voted on, except to be rejected. Now we have another hold, and that is the count system, again revived by Dr. A. O. Hunt, of Omaha; this great scheme is the only reliable method by which we may know the qualifications of the student. Dr. Hunt has labored hard and against great odds, but he has succeeded.

The schools of this city, I am glad to say, have adopted high school graduation to go into effect in 1907.

This whole question of dental education is settling itself. The present system of the faculties' association of adopting thirty teaching weeks in each of three years, exclusive of vacations and holidays, is not a loss to students because it does not go into the four years' course. If they adopted thirty-two weeks, six days in each week, extending over a period of four years, it would accomplish just what Dr. James referred to, a continuous amount of work up to the time when the student is not required to make any further progress in the school to prepare himself to practice.

We never get through learning. We can not learn everything in college. We learn more after we get out of college. But the work done under the present system gives the student more actual work

than he would get in four years of seven months. There never was a course of instruction that enabled us to tell how much work a student does until now. In Europe you may matriculate and then go on a hunting trip. They do not care, but you must present yourself for examination, and if you fail to pass, you must come up again. In that way you may be a student for twenty years, and it makes no difference. If our students do not attend, they get no credits and can not be examined. That is the difference between the two systems.

I am satisfied that the South will advance their standards as fast as possible, but it must be reached by growth, a gradual development and not a sudden reach for something that can not be obtained or lived up to.

DR. A. H. PECK:

Mr. President and Gentlemen—I have felt somewhat disappointed as time went by and it became more and more apparent we were to have no copy of President James' paper or address, that we might the better prepare to discuss it. But since I have heard him speak I feel better about it. Indeed I am not quite sure but I am glad he did not send it, for I fear I would not have known what to do with it if he had.

That President James has presented this great subject of dental education to us in a way quite unusual, and in a broad-minded, scientific and comprehensive manner, all must admit. I consider it one of the privileges of my career in dentistry to have heard this address tonight. I deplore the fact that more members of the profession of the city are not here. Surely all must be interested in anything which has for its object the betterment of the profession. One could not have used an evening to better advantage than to have spent it here listening to this address.

President James has, as stated, treated this subject in a broad way, purposely, no doubt, omitting the consideration of details, leaving this part of the subject to us, who, as dentists, possibly are better prepared to discuss it.

There are many lines of thought connected with the details of dental education one might discuss perhaps with more or less profit, but I will confine myself to a few of them in the legislative department of the subject.

There exist two legislative bodies, of a national character—the Faculties Association and the Examiners' Association. I have heard it intimated that the Examiners' Association might be accorded a back handed slap during the discussion tonight. If this be true permit me to say I believe each of these associations has its place in connection with dental educational matters. The present state of college control, however desirable it may be, could not have been effected through the efforts of either one association. But the working together, true not at all times with that harmony of action and unity of purpose desirable, have accomplished much and much remains to be accomplished before we shall be justified in saying that our college control is all that can be desired. If these associations will work together in harmony and with one common purpose, matters pertaining to dental education will be greatly benefited in the near future.

That these associations have each made mistakes in the past will not be denied, to say which one has made the more might be difficult, but if they will only "round to" and let us have needed regulations for the future, we will not complain.

Among the evils as I see them, and which I should like to see corrected, are the present method of judging the preliminary educational qualifications of applicants for matriculation. This work as practiced at present by deputies of the educational department of the State is more farcical than otherwise. Some method should be devised and put into execution whereby only applicants who are capable of satisfying the letter of the enactments, placed on the list of requirements by the legislative bodies, shall be permitted to matriculate.

Many students are admitted to colleges, carried on through the course and graduated, who are not by nature and never can be by culture, fitted to practice dentistry. Some system of procedure should be observed by the colleges whereby such incompetents, as soon as they can be determined upon in their freshman year, shall be weeded out and advised to seek some other field in which they may hope to succeed.

Another point I am not altogether in sympathy with is the placing, absolutely, in the hands of the examining boards the determina-

tion of the reputability of the dental schools. The examining boards are appointed by the governor of the individual state and the governor is likely to be influenced in his appointments by the desire to build up about him as strong a political machine as possible. Consequently we do not know this year what sort of men may constitute our examining boards next year.

Our present governor has already given it out that he will not bind himself to appoint men on the board who have been recommended by the State Society, but proposes to appoint whomever he will. If we could always have men of such sterling worth and unimpeachable integrity as constitute the present board of this State, we would feel quite safe in placing this matter in their hands, knowing their exactions would be just and placed on a basis of intelligence, and good judgment. But as stated above we have no assurance that our State boards will always be constituted of men like these, and, too, there is no stability provided for in this matter. The present board may formulate a set of requirements to which the colleges must adhere that they may be considered reputable, and the very next board that is installed into office may destroy the work of the present board in this particular, and bring forward an entirely new set of requirements to which the colleges must comply that they may continue to be considered reputable. This part of the legislative work is incomplete, something more is needed here. When the State board is composed of such men as we can call to mind, and without any tax of memory, I say and you will agree with me, this matter of the determination of the reputability of the colleges has no more right in their hands than have the Russians to even presume they are able to whip the Japs.

Another point in connection with dental legislation to which I strenuously object, is the statute some states have, and others are trying to have, whereby the examining boards are vested with the right to refuse an examination for license to practice, to all except regular graduates in dentistry or those who have practiced dentistry at least five years before applying for examination.

I am as steadfast a believer in college training as any one present. I would, were it possible, have every individual receive college training, the better to fit him for his vocation, no matter, in the main,

what it might be. At the same time, I also firmly believe if one has the requisite ability to successfully engage in his chosen vocation no matter whether gained in a college or out of a college, to him the right to use that ability is an inherent one, and from him no human power has the right to take it.

And again, the statutes as they exist in the various states, regarding the interchange of license to practice, do not altogether suit me. I can conceive of conditions existing in certain states, which may render it undesirable that a licensed practitioner should be permitted to remove to a different state and resume the practice of dentistry without first being subjected to an examination as to his fitness as regards the requirements enacted by the board of the state to which he has gone. But in the main I believe one's license to practice dentistry in any state should be considered *prima facie* evidence that he is qualified to practice in any other state.

This matter, I think, should receive the thoughtful attention of the examining boards both state and national and they should endeavor to effect, as speedily as possible, as nearly a uniform standard as may be, thus rendering possible an interchange of license to practice.

How this may be effected, if it ever is, I shall not presume to say. It may be Dr. Chittenden, of Madison, Wis., in his paper, written two or three years ago on the "Reputability of Dental Colleges," indicated how it may possibly be brought about, when he said: "The only way this country can establish and maintain its supremacy in dental educational standards over the rest of the world, is by a concerted *national* legal standard being made by the legal guardians on whom the sacred trust is imposed," thus recognizing the necessity of *uniformity* throughout the country in these very particulars of which I have spoken, and hinting that the action must be of a national character.

At all events what the dentists of this great free land want in these particulars is a "square deal." They want to be accorded that spirit which we see so beautifully emulated in the life, character and public acts of the chief magistrate of this nation.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: C. N. JOHNSON, M. A., L. D. S., D. D. S.

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EDITORIAL.

THE NECESSITY FOR A VACATION.

There is no class of workers in this modern human hive upon whom the burden of continued effort falls more heavily than upon dentists. The environment and the nature of the work is such that the monotony and nervous tension become almost unbearable if followed too long without a break. The physician and lawyer have diversity with their work; the mechanic at the bench labors upon inert material, free from the tingling resentment of human nerves. And the dentist is obliged to continuously listen to a recital of all the petty ills from the ancient "gum-boil" to the modern "automobile face." Small wonder that dentists break down early unless they get away from the office at intervals and forget for the time that they are dentists. The man makes a mistake and limits his efficiency who remains year in and out at the chair and becomes steeped in the associations of so narrow an environment. Better economize in some other way than to attempt to save money by staying in the office the year round and becoming stale and jaded.

The men who accomplish most are those who renew their energy at intervals by a complete change of scene and by devoting their attention occasionally to an entirely different line of activities from those of their routine work. Get out in the woods or on the water and take a breath of nature. After all, when one comes to think of the artificiality of modern life, there is nothing so refreshing and life-renewing as getting back again to first principles and living close to nature. Put on old clothes, live in the open air and rough it generally at least once a year. The sum total of accomplishment will ultimately be far greater than if all the time is spent in a steady grind, and the diversion will give a spice to life which a dentist sadly needs.

PRACTICAL HINTS DEPARTMENT.

EDITED BY G. W. JOHNSON, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, THE DENTAL REVIEW, 55 State street, Chicago, Ill.]

Burns from Acids:—If you get carbolic acid on any surface where it is not wanted, apply absolute alcohol at once. If hydrofluoric acid, apply a strong solution of bicarbonate of soda. Never use these acids without having readily at hand some agent to stop their action immediately in case of accident.

D. C.

Easy Method of Removing Regulating Bands:—To remove regulating bands or crowns, grasp the band with forceps and squeeze with firm pressure, repeating the process around the tooth if possible. This will loosen the cement and may even expand the band so that it can be easily removed.

F. W. STEPHAN, Chicago.

Protecting Cement Around Inlays:—Unless the cement used for setting inlays is a hydraulic cement, it should be protected from moisture for some time after the inlay is placed. A good method of doing this is to flow wax over the joint between inlay and enamel with a heated instrument. Leave the wax on till it is worn off by friction of the tooth brush or by mastication.

I. C.

Worn Pulleys:—If a pulley on the engine gets worn so that the groove is rounded instead of V-shaped, and the belt begins to slip just when you need the engine most, place an elastic rubber band around the pulley and let the belt play on that. This will effectually prevent slipping, and, while only a temporary expedient, it helps out in an emergency. To avoid trouble in the future, get a new pulley.

O. P.

For Pyorrhea Pockets:—A good agent to use in pyorrhea pockets is sulphate of copper in crystals. This agent is disagreeable to the taste of many patients, but this may be modified by the following

method: Sharpen an orangewood stick to a point, dip it in one of the essential oils and with the moist point pick up some of the crystals and work them well into the pockets. In very bad cases apply the crystals twice a week. The gums will rapidly improve under this treatment.

E. D.

Shading Inlays:—In selecting shades for porcelain inlays, pick a shade darker than seems necessary for labial cavities at the gum margin. The tooth usually deepens in color as it approaches the gum, and unless the inlay is darker than the rest of the tooth it will be noticeable. For proximal cavities in incisors or cuspids, select a shade lighter than the case would seem to indicate. There is usually a slight dulling of the color in these inlays when cemented, and if the inlay matches the tooth perfectly before setting it will be a shade too dark after being cemented.

I. W.

Dr. Moffat's Case:—The case mentioned by Dr. J. N. C. Moffat in our June issue where a swelling appeared on the gum over a molar with a living pulp was evidently one of two things—either a calcic abscess from serumal deposits such as we frequently see, or else it was caused by the lodgment of some foreign matter under the free margin of the gum. This often causes the extreme sensitiveness cited by the doctor. The fact that he noticed no pus on lancing was due either to the fact that pus had not yet formed, or else that it was in such small quantity that it was not noticeable.

THE EDITOR.

Arranging Artificial Teeth:—Artificial teeth are usually arranged so that when placed in the mouth they look so uniform and regular that a natural effect is not produced. This should be avoided, because the natural teeth in the mouth are never perfectly uniform. A slight irregularity of two or more teeth adds much to the natural effect that should be produced in artificial dentures, and those who insert them should recognize the importance of the arts as well as the mechanics in prosthetics. Two cases precisely alike can not be found, and can not be treated the same with good results in each. We must treat each individual from an individual standpoint. When trying

in a plate before vulcanizing, note the effect that a little rearrangement will produce and in this way good results may be attained.

I. T. O. R.

Shading Facings for Gold Bridges:—In selecting facings for gold crowns or bridges, much care must be exercised to obtain the correct shade. This may be accomplished by the use of a piece of gold or platinum held at the back of the facing, as previously explained by Dr. R. L. Graber, of Peoria, Ill. If the crowns are all on one side of the mouth, each crown should harmonize with the corresponding tooth on the opposite side, providing that the natural teeth have not been discolored. Teeth in one mouth are not all the same color. A good effect is usually produced by backing the lateral with platinum and the cuspid with pure gold; then the bicuspid facings with platinum. The central may be backed with the metal which seems best suited for the case, and after a little experience the operator can usually determine at a glance which metal to employ. Try this method and note the results.

I. T. O. R.

DOMESTIC CORRESPONDENCE.

TO THE EDITOR OF THE DENTAL REVIEW.

Dear Mr. Editor:—To sit in an easy chair, or lie in a hammock under a California pine tree at an altitude of 1,500 feet, with the temperature about sixty-five at nine o'clock a. m., with a gentle ocean breeze to fan one's brow and make music overhead, with a copy of THE DENTAL REVIEW for May in hand and no interference for an hour, that is luxury, as I had it today.

I am moved to say something in the way of correction possibly as to a statement made by one of those who discussed Dr. Goslee's paper. I knew Dr. McKellops very well indeed, and heard him many times express his views on operative dentistry. I never heard him say that he had not placed any kind of a filling in teeth except gold, or that he had offered a reward to any one who would find a mouth in which he had inserted any other filling than gold. What he did say often was that he would give a thousand dollars to any one who would find an amalgam filling that he had inserted. His special

abomination was the use in the mouth of what he denominated "*base metals*." By this term I understood him to mean almost everything except gold, though I believe he did not object to platinum. He also said, "If you can not use gold, in children's teeth, for example, use cements. If for any good reason a permanent tooth must be filled temporarily, use cements, no matter how often you replace them, till the time comes that you may insert gold—but never a base metal." I do not think that he objected to gutta-percha, and I am not sure as to tin, but *amalgam*—that to him was brilliant bovine *red*. The sight of it made him roar and paw the earth every time. Well, I never could bring myself to adopt the extreme views of Dr. McKellops, but I think he was a great deal nearer the real chalk line than a lot of other extremists I have known before and since. If his theories were extra fine there was nothing slouchy about them at any rate. The practice he advocated and had the courage to follow was of a safe kind in his day. Amalgams generally as he knew them were detestable. They are better now, and yet, what shall we call their use but a makeshift? I think Dr. McKellop's views were sounder than those of somebody on use of the matrix and non-use of rubber dam for gold fillings. The papers and discussions were all enjoyable even if I couldn't reach the point of delightful agreement with everything everybody said.

Referring to ye Editor's Desk, let me say that overwork and getting tired out is the one thing that gives me the blues. I prefer the "rest cure," and greens are good for blues, greens of the meadows, and greens of the trees, with time and a book.

Truly yours,

GARRETT NEWKIRK.

Pasadena, Cal., June 5, 1905.

NEW YORK LETTER.

NEW YORK, July 1, 1905.

The New York Institute of Stomatology met as usual for its June meeting at the "Chelsea." Under "Incidents of Office Practice," Sinclair Tousey, M. D., of New York, presented some radiographs illustrating abscess and necrosis as a result of incompletely filled roots of teeth. He described in detail his method of obtaining these pictures, which is essentially his own. He has also per-

fecting a method of *immediate* development of photo plates so that one does not have to wait long for the picture.

The first thing on the regular program that evening was a short paper by Dr. S. E. Davenport, of New York City, entitled "Some Partial Impressions." He described the making of *special* cups for taking impressions of the mouth in individual cases—especially the difficult ones—for which no universal cup exists. Sometimes these special cups are "struck up" of some base metal, over a die made from an approximating impression, and on other occasions they are cast. In any case he obtains a cup which fits the case and permits using a very small amount of impression material. He claims that having such a cup and using a very small amount of *compound* a better impression is obtained than could be in any partial case with plaster.

After a brief discussion pro and con, the next paper, entitled, "Errors, Mistakes and Failures, Old and New," by Dr. Clinton W. Strang, of Bridgeport, Conn., was read.

Describing many of the mistakes of our earlier years, and mentioning some errors of his own, he maintained that often these were "blessings in disguise," in that they enabled one to learn things he otherwise would never know. And the intelligent, conscientious operator is helped thereby to avoid a repetition. He thought it a wonder failures were not more frequent. And he also spoke to some length on the failures of the "other fellow," particularly the oral specialist.

Dr. Leroy cited the case of a relative whose twenty-eight teeth came in regularly and the mouth presented a beautiful appearance until it was time for the eruption of the third molars. The uppers started first. The effect on the arch was to break it, causing the lateral incisors to overlap the centrals when the lower third molars appeared. They probably restored the articulation with the upper teeth, but the movement forward slightly disarranged all of the incisors. Subsequent attempt to regulate this condition without spreading the arches was only partially successful, it being considered inadvisable to adopt the extreme.

Dr. F. M. Smith, in discussion, said some of the gravest mistakes he has made were in not regulating teeth for many of his patients.

Dr. Bogue said that he confessed to one of his patients that if he had to do over some operation, he would have treated her differently now.

Dr. Bogue, in answer to a question as to the effect of the extraction of 3rd molars in crowded arches, said those teeth were very valuable; they acted as bracers to the rest of the arch and as "bumpers"; if extracted the other teeth feel the release and incline to "space," which permits of food, tartar, etc., accumulating in the interproximal spaces which induces decay or pyorrhea or both.

Of course, there were those who argued that extraction was a necessity at times. Dr. Bogue does not think so.

The C. D. A. of Northern New Jersey celebrated its last meeting for the season by diverging from its usual channel, meeting at an old-fashioned inn on the shores of the Kill von Kull, which is the channel between Staten Island and the Jersey Shore. Members and guests to the number of about seventy assembled on the evening of June 19, and sat down to an elaborate dinner, gotten up under the direction of Dr. Charles A. Meeker and his able associates of the dinner committee. We had been invited to come early—sit on the veranda and "watch the shipping go by." Some did, but the larger number came at seven. We were promised nothing heavier in the way of after dinner remarks than such incidents of office practice as might be given. In this a former resident of your town, who is now a full fledged Gothamite—Dr. A. W. Harlan—was first, giving an office incident in re professional fees.

After some others had mentioned minor matters Dr. Mitchell, president of the Bayonne Dental Society, was introduced. He made a brief speech, speaking of the new organization, scarce a year old, and of the good it had accomplished. We spoke of this society some time ago in one of our letters. The idea of having the C. D. A. meet at the Hotel La Tourette on the "Kill" was mainly to bring out this young society. We hope to give you some news of it this coming fall and winter.

The Interstate Dental Fraternity, of which you know some good things, and which perhaps owes its existence entirely to Drs. C. A. Meeker and R. Ottolengui, held one of its enjoyable reunions on the sixth of June. These meetings are almost entirely social in their

nature, though occasionally "on the side" some important things are presented. The dinner this time was a regular German affair held at Lüchow's, which is famous for its beers and dinners. There was little outside the social nature of the banquet except some discussion as to the "Future of the Fraternity," the feasibility of introducing some secret organization features. Nothing definite resulted.

The next meeting of the fraternity will be the third annual and will occur on Monday, July 24, at the Hotel Iroquois, Buffalo, N. Y., during the national association's meeting.

Those who are on the outside will do well to seek to get on the inside of this organization.

Several times this past winter Correction of Irregularities has been the topic before our societies. The last meeting of our young "Institute of Dental Technique," to keep in line with the other societies, presented a paper by Dr. Rolof B. Stanley, entitled a "Few Considerations on the Treatment of Mal-Occlusion," in which he followed largely the lines laid down by Dr. Angle. This society has prospered and is doing good work.

During the winter and early spring three of our prominent practitioners here in the East have been greatly incapacitated for business, and in the hands of surgeons. We refer to Drs. E. A. Bogue and W. W. Walker, of this city, and Charles S. Stockton, of Newark, N. J. Fortunately they have all come through their difficulties, and Drs. Bogue and Walker seem to be enjoying life as of old. Dr. Bogue sails for Europe on the twelfth of July. But Dr. Stockton, since February 28, or about that date, has been a great sufferer, and is not yet able to go to business. At his years such troubles come with added severity. We are promised something from him at Asbury Park when the Jersey State Society meets, if he is able to be there.

The programme of this liveliest of state organizations has gone forth and is a marvel. It has increased in proportions each year until now it has attained those of a booklet of thirty-four good sized pages, without a line of advertising matter therein.

It is the thirty-fifth annual session and will convene at the Auditorium, Asbury Park, N. J., on July 19, 20 and 21.

THE BURROUGHS.

BOOK REVIEWS.

NOTES ON DENTAL PORCELAIN.—By V. Walter Gilbert, D. D. S. Illustrated. Published by the S. S. White Dental Manufacturing Company, Philadelphia; Claudius Ash & Sons, Limited, London.

This is a book of 126 pages intended, as the author says, for beginners. But it will be found useful as well for those who have already worked porcelain, dealing as it does with all the uses of porcelain in the mouth from continuous gum work to inlays. It is filled with useful suggestions and will well repay reading.

COLLEGE COMMENCEMENTS.

THE DENTAL COLLEGE OF WESTERN RESERVE UNIVERSITY.
GRADUATES.

E. N. Allison, J. B. Atchison, D. B. Bebout, J. R. Bentley, H. R. Binkard, C. A. Brown, C. H. Clark (honorable mention), W. S. Deeley, J. B. Ellis, L. M. English (honorable mention), D. B. Ford, W. B. Gerow, A. W. Haines (honorable mention), W. Heller, L. E. Howk, L. H. Hutchins, A. C. Knapp (honorable mention), C. T. Magner, C. H. Maloney, G. C. Mitchell, C. S. Mygatt, M. D. Neff, E. D. Phillips (honorable mention), G. W. Smith, H. G. Weber, C. E. Webster, D. V. Weedman, H. R. C. Wilson (honorable mention), M. L. Winger, F. Zavodsky.

COLLEGE OF DENTISTRY, UNIVERSITY OF ILLINOIS.
CLASS ROLL.

G. D. Ament, H. S. Alsip, B. B. Autenrieth, E. R. Bailey, G. Baker, W. H. Berry, H. S. Bott, J. A. Campbell, L. W. Clancey, J. R. Clary, C. E. Comer, W. H. Crandall, J. E. Darmer, L. E. Eiser, J. J. Flanigan, G. E. Funston, S. F. Gordon, M. A. Grissom, R. J. Gunn, G. R. Houston, K. W. Houston, R. E. Houston, F. H. Ivey, F. H. Kelly, N. LeR. Kerr, N. Kimmel, W. A. Krebs, R. W. Krog, J. B. LaDue, H. M. Lancaster, E. A. Lewin, T. H. Logan, A. G. Lyle, W. G. McCall, J. F. McDonald, C. McDowell, E. N. McDowell, J. E. McKahn, J. F. McSwiggin, J. P. Marshall, N. R. Mecham, A. Mindlin, V. A. Moore, A. G. Nauman, R. G. Nordgren, C. C. Nugent, D. A. Peterson, J. C. Pogue, W. R. Porterfield, M. J. Quinlin, S. J. Ramsey, R. R. Rains, P. A. Rotzoll, T. L. Schroeder, H. V. Shaw, C. M. Sherrill, F. H. Smith, I. L. Smith, E. W. Smith, M. H. Spare, G. H. Stephenson, A. J. Stevens, W. F. Stone, H. B. Strain, J. M. Thomas, T. Waterworth, D. I. Weisz, A. D. Wood, P. F. Wybraniec, A. J. H. Young.

NEW YORK COLLEGE OF DENTISTRY.
GRADUATES OF CLASS OF 1905:

E. M. Agostini y Godoy, L. Agostini y Godoy, T. H. Albright, A. D. Anderson, A. B., G. H. Areskog, L. Baum, A. N. Bauman, S. S. Beck, B. S., A. Bernstein, B. S., B. Bernstein, M. M. Bluhm, S. S. Blum, A. S. Brownstein, O. J. Chase Jr., C. Chess, Arcadie Carr, S. B. Cooper, G. R. Daly, S. Davidson, I. Dennison, A. J. DeVile, H. H. Ducker, T. J. Faughnan, A.

Fergess, S. I. Freeman, D. B. Freundlich, M. Fried, S. L. Friedland, L. C. Gabler, G. J. Gerstenfeld, E. Gluck, H. Glückman, H. A. Goldberg, C. A. Gomer, J. S. Greenberg, R. W. Greenberg, M. Greenwald, B. Greif, A. Grosch, M. Harrowich, E. C. Haselhurst, F. Heene Jr., S. Helfman, M. Heller, M. Herbst, H. Hirschman, W. J. Hoag, M. S. Joffe, M. Kamenetzky, B. D. Kantrowitz, J. L. Kaufman, E. Krows, A. Kupperman, R. Lamkay, S. A. Lando, C. W. Lanphere, B. F. Levene, L. Levitt, I. Magee, D. A. Maret, M. Maschke, D. W. McLean, L. Michnoff, A. Miller, T. H. Monroe, J. H. Mullman, E. R. J. Munde, J. A. Murray, H. Nathan, S. J. Neuman, S. J. Oberwager, M. S. O'Connell, J. Orwan, J. R. Osborn, R. O'Sullivan, W. F. Perpete, E. D. Pollock, B. Pomerantz, I. A. Press, M. D. Rachlin, Ph. G., L. M. Robins, H. W. Rosalsky, H. Rosen, W. Rosenbaum, A. I. Schoenholtz, M. Schwartz, C. Scudder, G. L. E. Seidel, C. I. Simpson, C. E. Smith, D. L. Smith, H. Spitz, M. F. Sprinz, E. T. Sternfield, M. A. Strauss, W. N. Sum, W. H. Taylor, H. Trattner, H. Urban, C. M. Van De Water, J. A. Vuilleumier, H. J. Wahrman, G. G. Weinstein, J. B. Zeigler.

PHILADELPHIA DENTAL COLLEGE.

GRADUATES.

W. S. Anderson, F. F. Bent, A. L. Blaisdell, N. G. Bowkley, C. R. Chamberlain, C. Charlton, E. E. Chestnutt, J. E. Condren, C. C. Coomes, R. Coxon, A. Crucet, A. R. Currie, W. E. Dale, L. E. Dary, E. D. Dier, T. A. Doyle, D. M. Driver, J. P. Ekins, F. J. Farrington, W. J. Gardner, D. M. Garibian, E. J. Gibbs, G. A. Giger, Z. D. Gimush Gairdan, C. Goette (B. S.), R. E. Gordon, C. R. Grissinger, A. J. Groves, H. H. Haas, M. Hagopian (Ph. G.), J. A. Hall, R. A. Hand, A. C. Hanson, F. C. Harwood, C. G. Hazen, T. Heard, W. M. Henderson, L. N. Hengst, M. J. Henry, H. E. Hiltz, F. R. Holmes, C. J. Howlett, H. A. Houghton, S. J. Houk, H. C. Jackson, J. B. Johnson, J. A. Jones, F. E. Judson, W. Julian, E. H. Kahler, H. B. Kingman, A. L. Kniffin, H. Lehrman, H. Leitch, J. Levy, G. W. Lewis, H. Linstead, H. H. Long, J. H. Longnecker, C. J. Lynch, J. J. Maginnis, G. E. Matt, J. E. Mayer, J. C. Merle, H. B. Millen, M. R. Milne (B. A.), F. M. Mone, G. R. Moon, J. E. Musselman, A. McClellan, T. F. McManus, E. McNeill, E. S. McNevin, C. B. McNulty, J. W. McPhillips, W. H. Nitzschke, J. M. O'Connell, W. C. Pennock, R. H. Perry, P. J. Phillips, R. G. Pratt, J. T. Pullen, A. S. Randell, M. Ratner, H. M. Reid, F. J. Roth (Ph. G.), W. W. Rumberger, F. A. Russell, H. W. Sancton, F. K. Sawyer, E. A. Schwabe, F. A. Scott, G. F. Scott, R. W. Scott, J. J. Shea, E. A. Sheehy, F. P. Slattery, C. H. Smith, H. R. Smith, S. H. Spaulding, D. J. Steiner, E. J. Strance, J. W. Sullivan, P. G. Terzian, N. L. Tuxbury, C. E. Van Wickle, J. T. Wallace, L. C. Watson, W. J. Webster, I. E. Weiner, E. R. White, J. A. Younie, H. L. Ziele.

MEMORANDA.

NORTHERN INDIANA DENTAL SOCIETY.

The next meeting of this society will be held at Logansport, September 19, 20, 1905.
FRANCIS M. BOZER,
Secretary.

AMERICAN SOCIETY OF ORTHODONTISTS.

The next meeting of this society will be held at Chicago, September 28, 29 and 30, 1905.
ANNA HOPKINS, D. D. S.
Secretary.

AN IMPOSTER.

Complaint is being made that a man claiming to be a practitioner from Chicago is imposing on dentists in different parts of the country by getting them to cash bogus checks. He is described as being dark in complexion and weighing about 170 pounds. Look out for him.

SOUTHERN WISCONSIN DENTAL ASSOCIATION.

Officers for the year: President, Dr. J. J. Wright, Milwaukee; first vice-president, Dr. C. F. Rodolf, Muscoda; second vice-president, Dr. J. H. Heidbrink, Union Grove; secretary, Dr. C. W. Collver, Clinton, treasurer, Dr. W. G. Hales, Mineral Point. Next place of meeting, Milwaukee.

THE MISSOURI STATE DENTAL ASSOCIATION.

At the fortieth annual meeting of the Missouri State Dental Association held in St. Louis May 24th to 26th, the following officers were elected: President, W. M. Carter, Sedalia; first vice-president, F. H. Achelpohl, St. Charles; second vice-president, F. G. Worthley, Kansas City; recording secretary, H. H. Sullivan, Kansas City; corresponding secretary, Sam T. Bassett, St. Louis; treasurer, J. T. Fry, Moberly. Board of Censors: J. C. Pasqueth, Mexico; J. L. Bridgeford, Macon; DeCoursey Lindsley, St. Louis. Committee on Ethics: J. B. McBride, Springfield; A. J. Prosser, St. Louis; F. M. Fulkerson, Sedalia. Committee on Publication: Otto J. Fruth, St. Louis; J. W. Hull, Kansas City. Committee on Inventions and New Appliances: Ralph H. McCrum, Springfield. Committee on History of Missouri State Dental Association: Burton Lee Thorpe, St. Louis. Time and place of next meeting, May, 1906, Springfield, Mo.

SAM T. BASSETT,
Corresponding Secretary.

"F. D. I."

INTERNATIONAL DENTAL FEDERATION.

The president of the F. D. I. desires the announcement to be officially made that the meeting called to convene in Hanover on August 7th is not to be a general meeting, but simply a meeting of the executive council and of the several commissions.

The following business will be transacted:

1. Report of the president.
2. Reports of the various national committees on recent actions taken in their respective countries in the matter of public dental hygiene and dental education.
3. Determination of the relation of the F. D. I. to the various national committees.
4. Relation of the national committees to the representative bodies of their respective countries.
5. Qualification for membership in certain cases where difference of opinion may arise.
6. The question of the advisability of publishing a pamphlet on the care of the teeth in such form as to be made accessible to the poorer classes.
7. The question of the possibility of manufacturing a tooth-brush at a price which will put it within the reach of the poorer classes. (Haderup.)
8. A discussion of the question: In what lines is the activity of the F. D. I. to be developed in the immediate future

The commissions thus far established by the F. D. I. are:

1. The International Commission on Education.
2. The Commission on Hygiene and Public Dental Service.

3. The Commission on the International Press.
 4. The Commission on Jurisprudence and International Ethics.
- To be organized: The Commission on Nomenclature.

EDWARD C. KIRK,
Secretary-General.

NATIONAL DENTAL ASSOCIATION.

ANNOUNCEMENT.

It is not possible for the secretary of the clinic section to do more than give the names of the clinical operators, as well as a general outline of the work which will be done at Buffalo on July 26th and 27th, for the consideration of the members of the National Dental Association.

There is not a department of dentistry which has been overlooked. Indeed, it can be said that the members on the committee have attempted to obtain the most diversified number of chair and table clinicians possible to bring together.

To begin with there will be two surgical operations of a major order. There will also be several of a minor nature, such as surgical treatment for alveolar abscess and conditions of pyorrhea.

Somnoform, narcotile and nitrous oxide and oxygen will have their advocates present and the use of these different agents will be fully demonstrated.

Those interested in porcelain will have a chance to see porcelain inlays made, as well as the construction of porcelain crowns and bridges. There will be any number of operations made with gold by the members of the Black Club and other men. There will be operations made with amalgamated gold, amalgam, tin, etc.

A number of gentlemen will also demonstrate crown and bridge operations. There will be an extraction clinic.

Table clinics.

It is out of all question for me to attempt giving the reader an outline of the different things which are to be exhibited. There are upward of one hundred names on my list and it would take up half the contents of this journal to publish the program in detail.

There will be forty chair clinics each day.

Surgical Operators—Dr. T. W. Brophy, Chicago; Dr. M. C. Smith, Lynn, Mass.

These gentlemen will take care of the major surgical operations. There are a number of others who will make the minor surgical operations: Dr. H. R. Abbott, London, Ontario, narcotile; Dr. F. K. Ream, St. Louis, Mo., nitrous oxide and oxygen; Dr. F. R. Wagner, Watertown, N. Y., and Dr. P. M. Joyner, Union City, Tenn., somnoform.

Chair Clinics—Dr. H. W. Arthur, Pittsburg, Pa.; Dr. G. T. Baker, Boston, Mass.; Dr. William Conrad, St. Louis, Mo. (will operate for dentists only); Dr. G. W. Cochran, Erie, Pa.; Dr. T. J. Coe, Baldwinsville, N. Y.; Dr. L. S. Chilcott, Bangor, Maine; Dr. H. W. Campbell, Suffolk, Va.; Dr. Clyde Davis, Lincoln, Neb.; Dr. W. B. Dunning, New York; Dr. William St. George Elliot, New York; Dr. A. G. Fee, Superior; Dr. F. Freeman, Boston; Dr. S. Freeman, New York; Dr. F. A. Greene, Geneva, Ohio; Dr. Joseph Head, Philadelphia; Dr. E. E. Hawley, Golden City, Mo.; Dr. H. L. Howe, Boston; Dr. J. I. Hart, New York; Dr. V. H. Jackson, New York; Dr. D. O. M. Le Cron, St. Louis; Dr. T. M. Milan, Little Rock, Ark.; Dr. F. L. Marshall, Boston, Mass.; Dr. A. L. Midgley, Providence, R. I.; Dr. A. J. McDonagh, Toronto, Ont.; Dr. F. W. Proseus, Rochester, N. Y.; Dr. H. B. Randall, Erie, Pa.; Dr. J. F. Ross, Toronto; Dr. J. A. Sherwood, Buffalo, N. Y.; Dr. F. N. Stiff, Richmond, Va.; Dr. C. C. Sterrett, Kingsley, Kan.

The Black Club—Drs. A. C. Searl, Owatonna, Minn.; H. J. Beemer,

Newton, N. J.; G. N. Beemer, Mason City; W. R. Clack, Clear Lake, Iowa; J. V. Conzett, Dubuque, Iowa; K. E. Carlson, St. Paul; A. C. Fawcett, Rochester, Minn.; J. W. S. Gallagher, Winona; F. S. James, Winona; W. D. James, Tracy, A. M. Lewis, Austin, Minn.; G. D. Moyer, Montevideo, Minn.; J. B. Pherrin, Central City, Iowa.

The following gentlemen have consented to give table clinics: Dr. George C. Ainsworth, Boston; Dr. J. F. Adams, Toronto, Ont.; Dr. F. C. Brush, New York; Dr. G. A. Bowers, Nashua, N. H.; Dr. J. A. Brown, Morrisville, Vt.; Dr. J. Q. Byram, Indianapolis, Ind.; Dr. C. F. Bunbury, Rochester, N. Y.; Dr. J. H. Beebe, Rochester; Dr. N. A. Brounke, Mount Forest, Ont.; Dr. G. T. Baker, Boston, Mass.; Dr. R. M. Chase, Bethel, Vt.; Dr. L. M. Cowardin, Richmond, Va.; Dr. C. J. Evans, Baltimore, Md.; Dr. F. L. Fossum, New York; Dr. A. C. Fawcett, Rochester, Minn.; Dr. C. H. Frink, Fernandina, Fla.; Dr. V. H. Frederick, St. Louis; Dr. M. L. Fay, Buffalo, N. Y.; Dr. G. H. Gerrish, Exeter, N. H.; Dr. A. Gaiser, Davenport, Iowa; Dr. C. J. Grieves, Baltimore, Md.; Dr. L. M. Homburger, New York; Dr. B. S. Hert, Rochester, N. Y.; Dr. H. L. Howe, Boston; Dr. W. D. James, Tracy, Minn.; Dr. P. M. Joyner, Union City, Tenn.; Dr. J. H. Lorenz, Atlanta, Ga.; Dr. George A. Louque, New Orleans, La.; Dr. S. C. Luckett, Joplin, Mo.; Dr. W. H. Leake, Watertown, N. Y.; Dr. F. W. Low, Buffalo, N. Y.; Dr. C. W. La Salle, Rochester, N. Y.; Dr. F. B. Lawrence, Eldorado, Kan.; Dr. O. H. Manhard, St. Louis, Mo.; Dr. G. B. Mitchell, Rochester, N. Y.; Dr. F. Mesierschmitt, Rochester, N. Y.; Dr. Grant Mitchell, Youngstown, Ohio; Dr. A. F. Miller, Sandusky, Ohio; Dr. J. R. Mitchell, Perth, Ont.; Dr. D. J. McMillen, Kansas City, Mo.; Dr. Albert L. Midgley, Providence, R. I.; Dr. N. J. Mummering, Milford, Mich.; Dr. F. H. Nies, Brooklyn, N. Y.; Dr. Alfred Owre, Minneapolis, Minn.; Dr. T. W. Onderdonk, New York; Dr. H. M. Prettyman, Covington, Tenn.; Dr. James E. Powers, Providence, R. I.; Dr. S. D. Ruggles, Portsmouth, Ohio; Dr. A. C. Rich, Saratoga Springs, N. Y.; Dr. A. J. Sawyer, Manchester, N. H.; Dr. L. A. Smith, Port Gibson, Miss.; Dr. F. R. Sandusky, Nashville, Tenn.; Dr. O. H. Simpson, Dodge City, Kan.; Dr. N. A. Stanley, New Bedford, Mass.; Dr. E. B. Spaulding, Detroit, Mich.; Dr. A. E. Sager, Rochester, N. Y.; Dr. G. A. Savage, San Francisco, Cal.; Dr. L. C. Taylor, Hartford, Conn.; Dr. M. C. Tracy, New York; Dr. J. C. Watkins, Winston-Salem, N. C.; Dr. F. Westerfield, St. Charles, Mo.; Dr. W. A. White, Phelps, N. Y.; Dr. J. H. Worthen, Concord, N. H.

This comprises a complete list of the clinicians so far obtained. I shall not hear from the rest of the men on the committee until the 20th of June, and therefore a number of names are omitted which at present are either in transit or else have not been received. A number of the committee have written that they have finished their list, but so far it has not reached me. I should like to send a complete program for the consideration of your readers, but this it is out of all question to do at the present time.

The clinics will be held in the College Infirmary of the University of Buffalo, Dental Department, 27 Goodrich street.

The operations will begin at 9 a. m. on both Wednesday and Thursday mornings, July 26th and 27th.

As was stated in the last announcement, there is every indication that the forty chairs will have an operator at each of them on July 26th and 27th.

The thanks of the entire profession are due to the members on the committee and also to Dr. F. W. Gethro, Chicago; Dr. T. B. Hinman, Atlanta, Ga., and Dr. S. H. Voyles, St. Louis, Mo. The three gentlemen just named have rendered an excellent account of themselves in the work of assisting me toward obtaining clinicians.

E. K. WEDELSTAEDT,
Secretary of Clinic Section of N. D. A.

St. Paul, Minn., June 14, 1905.

THE DENTAL REVIEW.

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No. 8

REPLY TO DR. KIRK'S CRITICISM OF THE PARTIAL REPORT OF THE COMMITTEE APPOINTED BY THE CHICAGO DENTAL SOCIETY TO INVESTIGATE EROSION OF TEETH.

BY DRs. J. E. HINKINS, G. W. COOK AND J. P. BUCKLEY.

About two years ago we were appointed by the Chicago Dental Society as a special committee to investigate the subject of erosion of teeth, with the hope that something tangible might be added to our knowledge of this obscure subject.

A partial report of the findings of the committee was read before the society at its November (1904) meeting and published in *THE DENTAL REVIEW*, April, 1905.

Dr. Edward C. Kirk, of Philadelphia, acting upon a sense of duty to the profession, "in the interest of truth," has criticised this report under the caption "The Chicago Erosion Muddle," in the July issue of *THE DENTAL REVIEW*.

For convenience in criticising the report has been divided into two general sections. The first consists of a review which we made of the literature in order to familiarize our readers with all the various theories presented on the subject.

Dr. Kirk criticises this part of the report in that he claims that no reference has been made to two valuable contributions, one by Dr. James Truman and the other by himself; and that nearly all of the theories presented were based wholly on clinical observation. In reply to these objections we would say, first, that we recognize that it is quite possible to overlook some articles bearing upon the subject, as we found it an almost endless task to search the literature as thoroughly as we did; however, in justice to ourselves, we

will say that extracts from both of these articles were made and are in our original manuscript, but were omitted by the stenographer. The omission therefore was unintentional, and not because we were biased, as Dr. Kirk would lead our readers to believe. Secondly, as a careful reading of the report will show, we did not attach any significance to the theories based only on clinical observation, for we stated that "the latest theory and one of the few, besides that of Drs. Black and Michaels, which appeared to be based upon scientific facts, was presented to the profession by Dr. Edward C. Kirk, of Philadelphia." We felt then, and are still of the opinion, that to collect, in a concise form, the various theories would be valuable and interesting to the profession—the opinion of our critic to the contrary notwithstanding.

The second section into which our report has been divided is what Dr. Kirk has styled "an exhibit of what the committee doesn't know about erosion, but as they themselves entitled it a 'Partial Report,' it is doubtless only part of what they do not know about the subject."

In reply to the criticism on this section we will say that in our report we stated that one of the first things which the committee did, after searching the literature, was to examine polariscopically and compare the saliva and urine of each member of the committee, one member of which has a marked case of local erosion. We found that specimens of saliva taken from the mouth of each and placed under the micro-polariscope gave some fields with similar crystals, while others differed entirely. In most instances, however, the crystals had the same characteristics. Dr. Kirk concludes from this "that the saliva of the committee is not of uniform composition with respect to the different individuals nor in the same individual at different times, a belief generally held regarding saliva in general and supported by other known facts bearing upon the phenomena of nutrition and secretion to such a degree as scarcely to need the additional evidence furnished by the committee to confirm it."

Inasmuch as our report has been found to contain statements which were "ill-considered, careless and erroneous," and, furthermore, that it added "nothing to the advancement of science nor to the general respect for scientific research," we are somewhat surprised

to know that our critic has even given us credit for observing anything of a confirmatory nature.

Dr. Kirk further criticises the manner in which we attempted to make a compound called by him *calcium lacto-phosphate*, and which, viewed from the standpoint of chemistry, we were always in doubt as to the actual existence of such a compound. He says that "this was a mistake" (on our part, of course) "and that it did not show that an excess of acid had been used but does show that the committee did not know that lactic acid can not be neutralized by calcium phosphate; indeed it is quite questionable whether there is such a compound as calcium lacto-phosphate at all." Again he says, "The solution should not have been boiled, as boiling may, and in fact does, easily bring about decomposition or modification of composition in salts of many of the organic acids, etc."

Here we must exclaim "Oh consistency, thou art a jewel." We will now show our readers just how *consistent* and *reliable* our critic is.

So far as "boiling" the solution is concerned, we did not think it was necessary to mention that the concentration was done over a water bath. No one would think that it was done otherwise unless they were as skeptical of our methods as our critic appears to be. If "this was a mistake" it seems strange that one who purports to be an accurate scientific investigator should have used the same method. In *Items of Interest* (July, 1902) he states: "The saliva was dialysed and the dialysate carefully concentrated over a water bath, and we did get something tangible and characteristic which we were able to study and examine, and finally, by a method which I shall later describe, found *exactly* (italics ours) what the salt was." On page 524, "I think we have by this means demonstrated that the salt" (referring to "the something tangible" above) "you have originally seen in the saliva is the calcium lactate." On page 518, "the erosion in this particular case is a lactic acid erosion. All the salts are lactates or *lacto-phosphates*" (italics ours). Now we are criticised for using this term *calcium lacto-phosphate*. On page 516 (*Items of Interest*, 1902) we again find this statement: "The tooth is composed mainly of calcium phosphate, with a small proportion of calcium carbonate, some magnesium as phosphate, and some magnesium as carbonate, these being the four substances with which the lactic acid might combine" (not simply dissolve but "combine")

"with the result that there would be formed a lactic acid salt of calcium phosphate or calcium lacto-phosphate." *Lactic acid salt of calcium phosphate*; what does this statement mean to those who are familiar with even the rudiments of chemistry? But we are now acquainted with the tactics of our critic and know he will hurriedly say, "I used the word *might*." Therefore we will point to a more positive statement—there are many. On page 521 (*Items of Interest*, 1902) is shown Fig. 7, under which he states, "Calcium lacto-phosphate made by the *action* (italics ours) of lactic acid upon pure calcium phosphate." Three years later (DENTAL REVIEW, July, 1905) he says "it is quite questionable whether there is such a compound as calcium lacto-phosphate at all."

In chemistry the word *action* has a definite meaning and its use implies a change in composition. When common salt, for example, dissolves in water there is simply a blending of molecules, or more properly a dissociation of the sodium chloride into ions—there is no *action* between the salt and the water. Likewise, if it be true, and we believe it is, that "lactic acid can not be neutralized by calcium phosphate," there is no *action* between the lactic acid and the calcium phosphate in Dr. Kirk's Fig. 7, and "*calcium lacto-phosphate*" was not formed. Therefore, according to our critic's own reasoning, this statement of his, which we used, is chemically impossible and absolutely incorrect. From this our readers can readily see the manner in which Dr. Kirk desires to shift responsibility and the nature of his loose and incorrect method of making statements. We are willing to admit that it was doubtless a mistake to use his term, *calcium lacto-phosphate*; and are also forced to admit that it was a greater mistake to attach any significance to the article in question at all; for after carefully rereading it, together with the criticism on our report, we are vainly "left in doubt as to whether it was really meant to be a serious contribution made in the hope of adding something important to our knowledge of the subject under consideration," or whether it was only intended to produce a dazzling effect upon the minds of those who had given the subject little or no attention. It must be remembered that the committee's only aim and object was to become more intimately acquainted with the natural laws that are stealthily operating in the oral cavity, and that *they were only searching for facts*.

In our report the type made us use the word "sheath-like." Dr. Kirk is quite correct; it should have been "sheaf-like." The fact that our critic calls especial attention to this typographical error is evidence, to our fair minded readers, that he must have been sadly in need of something to criticise.

We have been accused of perverting Dr. Kirk's statement "respecting the causation of general erosion." On this point we will quote from Dr. Kirk's original article and are willing to leave it to our readers as to whether the conclusion referred only to *the* case which he studied or whether he generalized and referred to the probable causes of all erosion. On page 518 (*Items of Interest*, 1902) he says, "A comparative study of these compounds with the salts of the saliva, using the micro-polariscope, has resulted in finding that the erosion in this particular case is a lactic acid erosion. All of the salts are lactates or lacto-phosphates. I have found evidences of the presence of the acid calcium phosphate, which is an exudate from the gland, and I have found evidences of the presence of sodium acid phosphate. The determination of the solvent in this case and the general nature of the disorder, affecting as it does all of the teeth, would seem to make it necessary to divide our erosion cases into two classes—*those in which the erosion is general, in which all the surfaces of the teeth are uniformly involved, in which lactic acid is the solvent acid* (italics ours); and the other class which is distinctly due to the exudate from an abnormal buccal mucous gland or glands, the acidity of which is due to one of two things—the acid sodium phosphate or the acid calcium phosphate."

In our report we stated that Dr. Kirk says in *Items of Interest*, July number, 1902, "that lactic acid is doubtless the solvent agent in cases of general erosion and that acid sodium phosphate or acid calcium phosphate is doubtless the cause of local erosion." Now he says that "Dr. Kirk didn't say just that." If this is not what he meant to imply by the above quoted paragraph then Dr. Kirk can not properly use the English language.

In all the literature which we reviewed we were unable to find any author, except Dr. Kirk, who had made a distinction between the cause of erosion affecting all the surfaces of the teeth uniformly and that affecting only certain localized areas. This, if true, was a great advance toward solving this complicated problem; and this

was the reason why Dr. Kirk's *Items of Interest* paper "commanded so much of the Friday evening attention of the committee." It is but fair to state here that the members of the dental profession do not consider the problem of erosion of teeth as satisfactorily solved as does our critic. Therefore we undertook this line of work, and the theory which Dr. Kirk had advanced soon proved to be one of the *rocks* (not "rock"—there were many) upon which we split; for we could not come to any such conclusion.

On our illustrations the criticism reads "The report as published in THE DENTAL REVIEW is accompanied with fourteen illustrations, of which the last three are reproductions of those made by the writer and published in the *Items of Interest* in the article which the Chicago committee has undertaken to verify or to disprove as to its conclusions. Deducting these three it leaves eleven illustrations presumably original with the committee. The inscription under three of them states 'taken from Boston'; from what part of Boston is not stated and we are also left in doubt as to one important item in that no intimation is furnished as to whether the particular part of that great and important municipality from which the specimens figured were taken, was or was not suffering from erosion at that time."

The intention of our critic here was to further ridicule our work by what he thought was an elegant flow of sarcasm. But instead of doing this he has simply furnished evidence of the fact that he is unfamiliar with the literature and the work of men in crystallography; for the three reproductions we made, were taken from the work of L. Napoleon Boston and not from the "great and important municipality" by that name. "If ignorance is bliss, 'tis folly to be wise."

Again he states that "The remaining six illustrations original with the committee are all examples of the same salt, namely, di-sodium hydrogen phosphate, which is common to all normal saliva or at least to the saliva of all persons in fairly normal health; it is to this salt that the alkalinity of the saliva is due." We wish to state here that these crystals were found in acid saliva, as well as saliva which possessed the normal alkalinity, which shows that our critic is again making statements in his characteristic manner. Now, if Dr. Kirk is so certain that these specimens are all di-sodium hydrogen phosphate, he should have given the chemical test or positive

proof upon which he based his statement. To give a specimen under the micro-polariscope a definite name simply because it looks like something else, without making further confirmatory tests is little short of guess work. For as far back as 1820 Mitscherlich showed "that different substances crystallize with the same microscopic appearance, and many times with the same rotary power." There is no evidence in the *Items of Interest* paper to the effect that Dr. Kirk had reasons for believing the salts which he called calcium lactate and calcium lacto-phosphate, and which were "produced by allowing lactic acid to *act* (italics ours) upon a tooth for a period of say ten days" (page 522) or "*made by the action of lactic acid upon pure calcium phosphate* (italics ours) (page 521), were such, except that one specimen looked like what he knew was calcium lactate and the other looked like what he thought he knew was calcium lacto-phosphate. Such "gross carelessness or ignorance" as this can not be taken seriously by scientific research workers; and, yet, it is a serious matter to attempt to mislead those not familiar with the subject under consideration, by putting statements "of such manifestly questionable character" into an article professing to be scientific.

In regard to the use of the polariscope in connection with this work we would ask our critic to reread, or perhaps just *read*, that part of the report wherein we stated our reasons for believing that a polariscopic examination of the saliva is of little value in determining definitely the cause of this disorder. If Dr. Kirk measured the rotary power of the crystals which he examined there is absolutely no evidence of it in his article, and if he did not the polariscope was worthless. It would be interesting to know why our critic ignored the statement which we made in regard to the *life* of a membrane having something to do with the formation of crystals, and that salts which osmose through a live membrane crystallize differently than when they are dialysed through a dead membrane. We believe this to be of real scientific value, and would ask our critic if he finds this thought to savor "of that kind of mental activity known as subconscious cerebration." It may be that this thought was also advanced by him in another article "which the committee did not read."

Now we desire to call our readers' attention to the fact that

Dr. Kirk has not given any better interpretation of his work and methods than he did in his previous paper. There is an ethical rule among honest, scientific men that when their work is called in question or their methods not understood by others, that they repeat their work and try and give a better understanding of their methods and of their conclusions. Instead of this Dr. Kirk has preferred to try and debase the Chicago Dental Society as well as ridicule the work of the committee.

Just criticism is welcomed by every honest worker. It should serve as a stimulus for better work. In this respect the display of sarcasm by our critic has failed utterly. It will neither have a stimulating effect nor will it dampen our enthusiasm. The committee expects to continue their study of erosion, collectively or individually, as best suits their convenience; and, be it understood, that to answer further criticism, from this source and of this character, will be beneath our dignity; for Dr. Kirk, masquerading under the garb of truth, has exhibited only his egotism, and we have proved him to be insincere, unjust, unreliable and incompetent.

In conclusion, while we have no apologies whatever to make to our critic, we will say that the profession must know that men who make their livelihood practicing dentistry, as does each member of this committee, must necessarily do research work at a disadvantage and at a great sacrifice of both time and money; yet the work which we did was done honestly and in an unbiased manner and the results were likewise given to the society. We would have been untrue to our trust had we reported otherwise—simply because our findings did not corroborate the published and much cherished theory of our critic.

THE MAXILLARY SINUS AND ITS DISEASES.*

BY THOMAS L. GILMER, M. D., D. D. S., CHICAGO.

The intramural air sinuses are cavities in the bones of the face and head. They are the frontal, ethmoidal, sphenoidal and maxillary sinuses. Each of these is surrounded by bony walls of greater or less thickness and are each accessory to the nasal fossæ.

* Read before the Illinois State Dental Society, Moline, May, 1905.

The maxillary sinus or antrum of Highmore is the largest of the group. These sinuses are lined with mucosa, which is continuous with that of the nasal fossæ. The mucous membrane of these sinuses differs from that of the nasal fossæ only in that it is less vascular and therefore weaker and less able to resist injury and infection. The nasal fossa may withstand a serious inflammation and speedily regain its equilibrium, while an injury or pathological condition of the same extent in the maxillary and other sinuses unassisted, would be unable to resume a healthy condition from the fact that it is less vascular.

Eckly says that "The antrum is formed by an evagination of the nasal pit about the sixth month of the foetal life, and is lined by a delicate, loose, flabby, detachable and poorly nourished mucous membrane, continuous with that of the nose through the nasal orifice."

The antrum is variable in size, being smaller in the female than the male, having a capacity of from three to eight drachms according to the best observers. When we understand the relationship existing between the nasal fossæ and the intramural sinuses we readily see how any one or all of them through continuity of tissue, may be involved in disease originating in the nasal fossæ. We can also understand how the antrum may be involved in disease through a purulent discharge from either the frontal, ethmoidal, or sphenoidal sinuses finding its way into this sinus. The studies of Fillebrown and Cryer have demonstrated that through abnormal anatomical development the frontal sinus occasionally communicates directly with the maxillary sinus. Therefore when the frontal sinus is involved in suppuration pus will be discharged from this cavity into the maxillary sinus. This fact must be borne in mind in seeking for a cause of purulent secretions found in the antrum when the etiology is obscure. The history of each case should be critically examined into to discover the origin of the disease. If the history of the case shows that at the onset of the symptoms there was a severe alveolar abscess at the root of an upper bicuspid or molar, with a chronic suppuration following, we have with frontal, ethmoidal and sphenoidal sinusitis excluded, a pretty clear etiological factor established, or if following an attack of influenza there is a maxillary sinusitis indicated by pain and a sense of fullness in this region, which does not subside with the grip

attack, then in the absence of symptoms of inflammation in the other sinuses there is good evidence of antral involvement.

The diseases to which the maxillary sinus is subject are catarrhal or influenza infections, suppurations, cysts and neoplasms.

The catarrhal or influenza involvement may be evanescent or it may pass from an irritation or mild inflammation into a suppuration. If with swelling of the turbinated bodies there is stenosis of the ostium maxillary and a sinusitis exists in the antrum the fluid may accumulate to such a degree as to cause much pain with distention of the weaker walls of the sinus, viz., orbital, nasal or buccal. The pressure of the accumulated infected secretions may so lower the vitality of the already hyperæmic lining as to cause suppuration of a part or all of the mucosa. Should the parts involved in inflammation be immediately over the apices of the second bicuspid or buccal roots of the first and second molars and the ends of these roots, as is often the case, very closely approximate the floor of the sinus, then we may have death of the pulp in these teeth even though there should later be resolution in the lining membrane. The death of these pulps may result in a chronic abscess and continue the infection by discharging into the sinus. This it would seem is a reasonable hypothesis and may account for some of the sound pulpless teeth which are found at times in the posterior part of the upper jaw.

The term suppuration is used instead of empyemā because empyema does not seem applicable to the condition. An empyema is a condition rather than a disease, in which there is pus in a closed cavity, as in the pleural cavity. The antrum of Highmore is not anatomically a closed cavity since it has a natural opening in the ostium maxillary, therefore strictly speaking suppuration of this sinus can not be denominated an empyema.

Infections resulting in engorgements are most frequent during epidemics of influenza. During an attack of the grip we have as one of the initial symptoms a coriza. The influenza germ first attacking the mucosa of the nasal fossæ. This is followed by the inflammation extending, through continuity of tissue, to the accessory sinuses, the symptoms of which are rise in temperature, a sense of fullness and pain in one or both antra and in the frontal region over the frontal sinus. In addition to these symptoms transillumination

will show a decided shadow, preventing the light showing through the eye and cheek. This shadow, in the earlier stages of the disease, is the result of congestion or infiltration in the parts. In the majority of cases, with proper treatment, a sinusitis of this nature will disappear and the mucosa of these localities resume their normal state and function. If the disease is persistent and the osteum maxillary becomes closed by swelling of the turbinated bodies the exudate becomes infected by pyogenic organisms and pus forms, when there is a degeneration of the lining of the maxillary sinus in places, with a possible periostitis and osteitis following. If the inflammation extends to the periosteum and bone, the pus may burrow between these tissues and separate them. If this condition continues indefinitely parts of the bone die, and the suppuration is continued through presence of the dead bone. Since it is a well known fact that disease of the maxillary sinus frequently follows an attack of influenza, this result should be anticipated and active treatment resorted to, to prevent the entailment of this sequence.

There is a difference of opinion regarding the part diseased teeth play in causing suppuration of the maxillary sinus. By some it is thought that it is a rare exception that abscesses of the teeth are a cause of antral disease. My experience leads me to believe that chronic suppurations of the antrum are more generally caused by abscesses from infected roots in connection with the second superior bicuspids and the buccal roots of the first and second molar teeth, and occasionally by the teeth anterior to these, than all other causes combined. I have recently had a case in my practice in which pus from an abscess at the end of the root of a lateral incisor burrowed backward until it reached the nasal bony wall of the sinus from which it separated the periosteum overlying, causing necrosis of the bone, the pus finally pointing in the antrum.

It is well known that the apex of the second bicuspid root and the buccal roots of the first and second molars approximate very closely to the floor of the sinus. In such cases an abscess thus caused must of necessity open into the sinus, because less resistance is offered in this direction than by the bone buccally. It is a reasonable hypothesis to suppose that when the roots of the teeth before mentioned have but a thin layer of bone separating them from the floor of the antrum,

that a serious suppuration at the end of these roots may cause suppuration of the antrum and be continued in a chronic form indefinitely. When the roots of the teeth mentioned approximate closely to the floor of the sinus, applications of arsenic for the destruction of their pulps may cause a limited necrosis which may result in suppuration in the sinus. Also the forcible application of medicaments for the disinfection of the roots of teeth such as carbolic acid, oil of cassia, or some form of peroxide of hydrogen may result in suppuration of the antrum. The suppuration caused by the use of oxidizing medicaments is not through any destructive influence of the agent *per se* but through its influence in generating gas sufficient to force infectious material into the healthy tissue beyond, involving it in disease. I have seen one case of suppuration of the antrum of Highmore attributive to the use of arsenic applied for the purpose of destroying the pulp in a third molar. This tooth and the alveolar process immediately adjoining, through the influence of the drug, became necrosed and the tooth became so loose in its socket that it could have been removed with the thumb and finger. Enough bone was destroyed and thrown off to expose the posterior portion of the sinus, resulting in a serious suppuration of the whole antrum.

Whether the arsenic was carelessly applied or allowed to remain too long, I do not know, but the result and its cause were evident. I have seen a few cases of suppuration of the antrum traceable to traumatism. Not long since we had in my clinic at the dental school a case in which both antra were suppurating as the result of a fracture of the bones of the face. The suppuration was not discovered until after a period of nearly a year following the injury.

Syphilis is said to cause suppuration of the antrum, but I have never seen a case of this kind which could be definitely traced to that disease. We often find necrosis of the palate and nasal bones as a result of tertiary syphilis, and while it would seem natural that the antra might be an equally fruitful field of suppuration as a result of syphilis, it must be very rare since such a careful observer as Garretson states that after a long experience in the practice of oral surgery he has never seen a single case of antral suppuration which could be traced to syphilis.

Sinusitis of the antrum resulting in engorgement and suppura-

tion, is by far the most common of antral diseases, still there are other pathological conditions of the antrum which are far more serious in their ultimate results. Among these are neoplasms. Carcinoma and sarcoma are sometimes found here. When found in these localities they are most malignant since they are usually mistaken for suppurations and their true nature not discovered until it is too late. I have known curettement in two instances to be made in such cases supposing a non-malignant condition to be the cause of the enlargement of the buccal wall of the sinus, the first visual symptom observed. This treatment naturally aggravated the disease. The result in both cases was fatal. Metastases are rapidly produced when carcinoma invades the antrum, through the plentiful supply of lymph and venous channels. Unless sarcoma and carcinoma are diagnosed in their incipency with the blood supply to the parts lessened by carotid ligation and the removal of fully one-half of the jaw, and then followed up by vigorous X-ray treatment, there is but slight hope for prolonging the patient's life to any great period, and even with this vigorous treatment, in the most malignant forms of these diseases the prognosis is most unfavorable. It is difficult at times to differentiate between growths of this nature and cysts, dentigerous and otherwise. In each case there is bulging of the buccal or nasal walls of the sinus, or both, and perhaps also bulging of the eye through lifting of the orbital plate. Cysts are usually of slower growth and are not so generally accompanied by pain and rarely by general systemic participation. An exploration may be necessary to arrive at a correct diagnosis. The microscope at times is the only means, even then, of giving a positive knowledge of the true nature of the disease.

It is not so difficult to differentiate between a carcinoma or sarcoma and a simple engorgement or suppuration of the antrum, since in the earlier stages of neoplasms there is no pus to be found flowing from the antrum into the nose as is the case in suppurations, neither do the neoplasms have so sudden an onset as do the conditions resulting in engorgements. If the buccal or nasal wall of the antrum be destroyed by pressure from a growth within the sinus, and there protrudes a cauliflower appearing tumor, the rational conclusion is that we have, not a suppuration or engorgement to deal with, but a carcinomatous growth. Sarcomatous growths do not, as the carcino-

matous tumors, spring from the epithelial lining, but from the connective tissue beneath. There is not the same tendency in sarcoma to destruction of the nasal and buccal walls of the antrum, as in carcinoma. In sarcoma the entire cheek is enlarged, bone and all. There are three varieties of sarcoma found in these localities, the round cell, the spindle cell, and the giant cell. The malignancy of these is in the order in which they are given. The giant cell sarcomas when thoroughly removed rarely return or form metastases. The round cell and spindle cell varieties are far more formidable forms of the disease. The giant cell sarcoma is much more frequently found in the mandible than in the upper jaw.

As before indicated dentigerous cysts are sometimes found in the antrum. I once had a case in which I removed nearly two hundred small denticles from the sinus. Odontones are also occasionally found here. I had one case of this kind. It had grown to such a size that it almost obliterated the sinus. Impacted teeth have also been found in these localities. Polypi are also found in the antrum. These are polypoid degenerations of the mucosa as the result of suppuration. Pus sacs originating at the ends of the roots of pulpless teeth have been reported as completely filling the sinus. I have had in my practice one case of aneurism of the antrum. The buccal wall was very much bulged and thinned and from the pressure on the nerves there was considerable pain. This wall was opened for exploration to aid in diagnosis and at once there spurted forth a profuse rhythmic flow of arterial blood which was not controlled until a large opening was broken through the wall and the cavity packed. After the hemorrhage was controlled nothing was found in the sinus to indicate disease. It is presumable that it was an aneurism of the posterior descending palatine artery, it having reached the antrum by absorption of its walls or it may have been abnormally placed within the sinus. No other case of aneurism, so far as I know, has been reported. Had the entrance been made in the nasal wall in this case, some difficulty would have been experienced in controlling the hemorrhage. In this case transillumination showed a heavy shadow on the affected side.

Pus in the nose is not necessarily an indication of suppuration of the antrum as it may come from the ethmoid or sphenoid cells, or it may come from the frontal sinuses, or all three of these sources.

Pus flowing from the osteum maxillary is not necessarily pathognomic of suppuration in the antrum, as the pus may have found its way into the antrum from the frontal sinus through abnormal anatomical development as has been clearly shown by the observations as before stated. However, it is not reasonable to suppose that the mucosa of the maxillary sinus can long remain in a healthy condition if it is made a receptacle for pyogenic discharge from other sources. Sooner or later there is involvement of this sinus, which will require treatment but it can not be permanently cured until the original source of the pus has been found and eliminated. If pus is discharged into the nose from the osteum maxillary and there is no pain or soreness in the frontal region, and if there is a decided shadow on the suspected side when transillumination is employed, we are justified in an exploratory operation to decide the nature of the disease. In order to discover if pus in the nose comes from the antrum, dry the nasal fossa on the suspected side then incline the head in the opposite direction, when if pus is found in the nose the probabilities are that it comes from the antrum. If when the head is inclined forward pus is found in the nasal fossa, it probably comes from the posterior ethmoidal or sphenoidal sinuses. If when patient lies down on back we find that the pus discharges into the pharynx it probably comes from the anterior ethmoidal sinus as neither of these positions favor a discharge from the antrum or from the other sinuses. If the exploratory operation includes a generous opening through the anterior buccal wall of the sinus, just above its floor, we are enabled to determine the conditions of the antrum and generally remove the cause, if the source of the trouble lies here; but before opening the sinus we should as far as possible exclude all other sources. If accompanying or immediately following an attack of influenza there is pain in the cheek with a sense of pressure, bulging of the buccal wall or sense of protrusion of the eye and no discharge into the nose, it is pretty good evidence of an engorgement as a result of the extension of nasal inflammation. This may be promptly relieved by puncture in the nasal wall through the inferior meatus or through the buccal wall followed by irrigation with non-irritating antiseptic solutions. If there is only pain and sense of fullness in the antral region with no feeling of fullness of the eye or distension of the

buccal wall, then we should attempt a cure by internal medication to relieve the pain and such other remedies as will tend to relieve and dry up the secretions, and cause their absorption. Aspirin or phenacetin to relieve the pain, saline cathartics to relieve blood pressure and for its eliminating effects, and atropine to dry up the secretions. A good remedy for this purpose is found in rhinitis tablets (composed of quinine, atropine and camphor). This treatment should be coupled with antiseptic cleansing inter-nasal spray. By prompt treatment of this kind suppuration may be prevented which is a probable sequence unless the early symptoms are combatted vigorously. Suppurations of the maxillary sinus are sometimes treated by the rhinologists by irrigation of the sinus through the osteum maxillary. (Cryer says a sound can not be passed from the nose into the maxillary sinus.) It certainly would seem quite difficult to reach the antrum by this means unless the middle turbinated be removed, and even then, if the case be one of long standing involving polypoid degeneration of a considerable area of the lining, or if there is necrosis of the bony walls, it is doubtful if a cure could be obtained by any treatment other than by radical curettement of the diseased area. Some object to opening into the sinus from the buccal wall, believing this route offers greater danger of reinfection from the mouth than does the nose from the nasal route. Even if curettement is demanded some operate through the nose removing the nasal wall. This is possible, but the difficulties it would seem are greater by this route than through the buccal wall and it would seem that the nasal route would afford almost, if not quite, as easy means of reinfection as the mouth. Then there is the danger of injuring the lachrymal duct, besides the difficulty of seeing into the sinus through the nose and also the difficulty of introducing the finger for exploration all seem to indicate that the nasal route is a less favorable one than is the buccal wall route.

In the treatment of suppurations of the antrum it is important that a view of a considerable portion of the sinus be obtained, also that an opening sufficiently large be made to permit every part of the cavity being explored by the little finger. This is the operation I generally employ if curettement is demanded and my experience leads me to believe the fears of reinfection are not well founded. Upon an

examination of a skull it will be found that the anterior buccal wall of the antrum is quite thin and that through it access is easily and readily obtained. To do this operation separate the jaws and hold them apart with a mouth gag, placing it on the side opposite the one diseased. Place a large piece of folded gauze on the affected side sufficiently posterior to prevent the blood passing into the fauces. Retract the cheek with the Black cheek distender, then make a semi-circular incision through the mucous membrane and periosteum. This incision should extend from the first bicuspid to the second molar convexity downward on a line with the floor of the sinus, which corresponds with the duplicature of the gum tissue and the mucosa of the cheek. The mucosa and periosteum are now separated from the bone and elevated with a periostitome exposing the bone. With a bi-beveled drill of one-eighth of an inch in diameter, or with trephine of larger diameter, cut directly through the thin bony wall at a point above and between the roots of the second bicuspid and the first molar, directing the drill upward and backward. Enlarge this opening upward, forward and backward with a coarse cut fissure bur, until the little finger can enter the cavity. The cavity may now be explored by the finger and some idea of its condition obtained. If the cavity be now packed for a short time with gauze the hemorrhage will be controlled, when, with a strong light, we may make a visual examination of a considerable part of the sinus. The fear expressed by some that such a large opening may injure the contour of the face or that it may not completely close is without foundation. I have never seen a case in which the opening did not close, indeed, unless it be well packed it will close far too soon to permit treatment to be sufficiently prolonged. The older method of gaining access to the antrum through the alveolus of an extracted molar or bicuspid tooth is not satisfactory, since it does not, without great loss of bone and expenditure of much time, afford a sufficiently large opening. If drainage and irrigation only is the aim of the opening then this method may be employed, but in such a case, unless the tooth is the cause of the suppuration and must be sacrificed, it is better either to make a small opening through the nasal wall in the inferior meatus or through the thin portion of the buccal wall. Openings through sockets of teeth have the great disadvantage

in that food is forced into the cavity by mastication. It would seem best in all cases, except when simple drainage is contemplated, to make the larger opening in order that we may have the benefit of thorough exploration of the cavity for diagnostic purposes. In the opening made higher up, the cheek falls over it and prevents food entering. In a few instances I have found partial division of an antrum by septa with necrosis of parts of the bone forming these separations. These are easily discovered, if present, by the sense of touch in the finger and may be removed since the access is large enough to reach them. I have never seen a case in which the antrum was completely divided by septa. If the sinus contains polypoid degenerations, which is almost universal in chronic suppurations, with the larger opening they may be curretted out, denuding all of the walls, if it seems desirable, and I am of the opinion that the more thoroughly they are denuded in these cases the better, because it permits the cavity to fill up with healthy granulations. If the case is chronic and does not yield to palliative treatment and demands an operation, let it be on thorough and radical surgical lines. All know how unsatisfactory the results of the less radical operations are.

The after treatment is quite as important as the operation itself. This should include thorough irrigation of the antrum daily, with at least a quart of warm, mild cleansing antiseptic solution applied by means of the fountain syringe or irrigator. I know of nothing better for this purpose than McFarlane's Nasal Plasma tablets, composed of:

Sodium chloride.....	5½ grains.
Sodium sulphate.....	1½ grains.
Sodium phosphate.....	¼ grain.
Potassium chloride.....	2-5 grain.
Potassium sulphate.....	¼ grain.
Potassium phosphate.....	1-3 grain.
Menthol	1-15 grain.

I doubt if the oxidizing agents, much employed in the treatment of antral suppuration, such as peroxide of hydrogen, are ever necessary, and if the opening into the antrum is small it may work untold injury. This thought is repeated as a caution to those who have not given the subject sufficient consideration. After irrigating

the sinus it should be packed tightly with iodoform gauze. This packing should be continued for at least six weeks or two months after the operation and the irrigation continued after the packing is left off until the opening is closed. Objection is urged against the employment of iodoform gauze on account of its odor and taste, and because some persons are poisoned by its use. After having tried many kinds of gauze I return to the iodoform, since it gives far better results than the others. As to its systemic effects, I have yet to see a single case of rash or delirium or other poisonous results from its use in these cases. In rare instances I have known patients to complain of slight nausea. The nausea is probably due, not to the toxic effect of the iodoform, but to the taste. In order to get rid of much of the taste and odor, the cavity may be nearly filled with the iodoform gauze and the remainder of the orifice packed with plain or borated gauze. This, in a measure, prevents the escape of the iodoform into the mouth.

Formerly I have used in irrigating, rubber or glass points connected with the irrigator. I now employ with greater satisfaction a small soft rubber tube connected to the larger tube of the irrigator. This being flexible causes less pain in introduction and can be directed easily, so as to wash out all parts of the cavity. In some instances I have closed the end of the tube and punched holes in its side so as to direct small streams in all directions. The irrigator should be elevated to give sufficient head that the solution may be sent with considerable force to all parts of the sinus.

It will be observed that I do not employ plugs or tubes in openings following radical operations for suppuration. I do not believe they are ever necessary and they may be positively injurious in some instances by causing irritation. No tube can be fashioned to afford positive permanent drainage, and they are only permissible in some cases of simple engorgements due to catarrhal affections for irrigation, and then a soft rubber fenestrated tube should be employed. If access to the sinus be had, as indicated, the cheek falls over the opening, as before said, closing it so that when the packing is discarded food and other matter does not easily enter the cavity.

In order that a visual examination of the sinus may be had during treatment subsequent to the operation a small pea lamp with

long insulated wire connections may be introduced and the progress of the case watched.

If the roots of a tooth or teeth enter the antrum I am of the opinion that they should be sacrificed, as they hazard the good results which may reasonably be expected. Dentists realize the value of teeth and are inclined to take risks which are not justified where they allow such teeth to remain in the jaw as irritants.

In opening into the antrum by all means use the drill, or trephine and bur, in preference to the chisel, as the chisel splinters the bone and injures it far more than the rotary instruments.

For packing the gauze in the antrum use a small forked-shaped instrument, which may be easily bent to adapt it to such a curve that all parts of the cavity may be reached by it. This instrument was suggested to me by Dr. McGinnis, one of the assistants at my clinic. It works admirably.

If the dentists were fully qualified to make critical examination of the nasal fossæ, their usefulness would be greatly extended, and I hope and believe that in the near future we may have in the dental schools greater facilities for teaching the technique of nose examination by a well qualified rhinologist. So far as I am informed no dental school has systematic training in this work, and until it is a part of the curriculum he will be handicapped and must at times call to his assistance the skilled rhinologist to aid in arriving at a positive diagnosis.

REPORT OF THE REORGANIZATION COMMITTEE.*

BY ARTHUR D. BLACK, CHAIRMAN, G. W. DITTMAR, A. H. PECK.

Mr. President and Members of the Illinois State Dental Society, Gentlemen:

One year ago, when the chairman of this committee, as chairman of the committee from the Odontographic Society of Chicago, presented a report on the condition of the dental society organizations of Illinois, together with a plan for the reorganization of this and the other dental societies of the State, it was stated that certain results should

* Read before the Illinois State Dental Society at its annual meeting at Moline, 1905.

be attained by the adoption of the plan. After this society had unanimously approved of the plan and the present committee was named, we realized that we had a large task to perform if we should be able to come before you today with the expectation that our report would meet with approval. We did not even then appreciate the amount of work we had before us, for we had little realization of the interest that the profession of the State would take in the movement. We soon became impressed with the fact that the small membership of this society was due more to the fact that the society had not been doing its full duty to the profession, rather than that the profession was unwilling or uninterested when properly approached. We have found the profession so willing and anxious to carry out the plan that we have been able to accomplish in one year what we had expected would take two or three. It was the first plan that the organization of less than half of the State should be attempted during the past year, but more and more territory was added, and we are greatly pleased to report the completion of the organization of the entire State.

As the plan of organizing the various societies and reports of their meetings of organization have been published in the *Monthly Bulletin* issued by this committee, and as a detailed report of the work of the committee and the expenditures has been made to your executive council, we feel that we need refer but briefly to it, and then call your attention to some of the results attained.

Under the direction of this committee and with the assistance of the various local committees of organization throughout the State, numbering about one hundred and fifty members, all previously organized local societies have adopted the proposed plan, and new societies have been organized in the remaining sections of the State, making a total of thirty sections, each society a component of the State society. We present, as a supplement to this report, some printed statistics and a map, which give an excellent idea of the condition of the various sections of the State. On the second page of this printed supplement will be found a list of the local societies of the State, with the number of dentists residing within the jurisdiction of each, the number who are eligible to membership, the percentage of the eligible men who have joined, and the number of members who actually paid dues from the same territory in 1904. It will be noticed that this society has in no section less than 35 per cent of the eligible men, while in

three it has over 80 per cent, and in many, more than 70 per cent. In the entire State we have as members 54 per cent of the eligible men and 43 per cent of all of the dentists of the State, as compared with about 10 per cent last year. Although the published transactions for 1904 show a larger number, but two hundred and seventy four actually paid dues for 1904, while this year eleven hundred and ninety-six have paid dues, an increase in membership of 436 per cent. The society had one hundred and sixty-nine paid memberships last year outside of Cook County, and seven hundred and thirty this year, an increase of 431 per cent, while in Cook County we now have four hundred and sixty-six members as compared with one hundred and five who paid in 1904, an increase of 443 per cent. We wish to call particular attention to the membership in the southern portion of the State. In the extreme southern sections of the State we have one hundred and sixty-four members, where we had but sixteen a year ago, an increase of more than 1,000 per cent. Little recruiting work has been done in Chicago. It is the intention to divide Chicago up into districts and canvass each district as thoroughly as we have the various counties of the State. The two large Chicago societies consolidated the first of this month and everything is now ready for a vigorous campaign. A comparison of the statistics presented this year with those of a year ago will prove interesting. On the third page of this report will be found a map of the State showing the different sections, with statistics for each section. On the succeeding pages of this printed supplement will be found the name of each society, with the territory within its jurisdiction, the time its meetings are held, the amount of the dues, the names and addresses of the president and secretary and a list of the members, with addresses, arranged alphabetically.

The secretaries of all local societies have been furnished with application blanks, receipt blanks, constitutions and by-laws and charters.

A Monthly Bulletin has been published during the past five months and has, we believe, been of material aid in the success of the work. We wish to call attention to the fact that we published in the May Bulletin a brief synopsis of each paper to be read at this meeting. This gave each member an opportunity to know how each subject would be presented.

At the direction of the Society the constitution and by-laws have been re-written and will be presented at this meeting for adoption.

Printed copies of the proposed new constitution are here for distribution.

A card has been written for every dentist in the State, whether he is a member or not. This card gives the name, address, component society, school of graduation with date, and date of license, or registration with the State Board of Examiners. This committee has recommended to the Executive Council that this list be checked with that of the Board of Examiners and the Examiners notified of all who are practising without licenses. It has also been recommended that the society subscribe to a newspaper clipping bureau for the advertisements of the dentists of the State and that whenever unethical advertisements appear the Secretary be instructed to notify members to discontinue same or be reported for expulsion. The executive council has already ordered that both of these things be done.

This committee has recommended to the Executive Council that a radical change be made in the manner of publishing the transactions of this society. We believe that the future success of the new organization demands that each member should receive a monthly publication containing the papers read before this and the local societies, and we believe the council will take such action.

We believe there has been a decided improvement in ethical conditions throughout the State as a result of the reorganization work, and we think this will continue to improve with a proper effort on the part of the members of this society. If every member will use his influence along this line, much improvement must result.

This committee feels that the passage of the new dental bill was in part, at least, due to the reorganization work. The committeemen at Springfield report that the representatives there were somewhat surprised and considerably interested to know that nearly half of the dentists of the State were members of the State society and all were behind the bill. We were able within twenty-four hours just at the right time last week, to have nearly one thousand telegrams and letters pour into Springfield and they were of material assistance.

In our report a year ago we emphasized the fact that we should be careful not to decrease the effectiveness of this society by increasing its membership; that we should keep up the quality of membership, as well as increase the numbers. As evidence of the fact that your committee has been careful in the selection of men, we call your attention

to the fact that two hundred and twenty-six practitioners of the State outside of Cook County have not been invited to join because we were uncertain of their ethical standing. While no doubt some few unethical men have been taken in, we believe the present membership is of the best men of the profession of the State and that practically all are men of whom the society should be proud. The manner in which the profession have joined in this work speaks well for the future of dentistry and the character of the men composing this branch of the learned professions.

This committee has sent out about twenty thousand pieces of mail during the past year, including several thousand personally dictated letters. It has been the endeavor to answer every communication calling for a reply as promptly as possible. We take this opportunity to apologize for occasional unavoidable delays, owing to the fact that private matters often had to be given precedence. So far as we know, however, every letter has been answered within a reasonable time.

There was some anxiety last year as to the effect that the reduction of the dues of this society from five to two dollars would have on the finances of the society. We are pleased to report that notwithstanding the heavy expense of the reorganization work, the treasury shows a net gain of over seven hundred dollars for the year, the money in the treasury at the close of the last session remaining untouched.

This committee and the Society are under especial obligation to Dr. Edmund Noyes, Dr. C. E. Bently and Dr. L. W. Skidmore for articles written for the Bulletin. We have recommended that the article by Dr. Noyes on the history of the Society be published in the regular transactions of the Society, and the Council has voted that this be done.

We are also under obligations to the following gentlemen for trips made in the interest of local societies: Dr. Elgin MaWhinney, Chicago; Dr. William F. Whalen, Peoria; Dr. J. S. Wright, Olney; Dr. F. B. Noyes, Chicago; Dr. W. J. Adams, Knoxville; Dr. A. I. Sargent, Galesburg; Dr. F. W. Gethro, Chicago; Dr. C. B. Rohland, Alton; Dr. T. L. Gilmer, Chicago; Dr. A. M. Harrison, Rockford; Dr. J. H. Prothero, Chicago, and Dr. F. E. Roach, Chicago.

In closing this report we wish to call attention to the fact that the future of this society and in a large measure the future of dentistry in the state depends upon the success of the local societies that are

now components of this organization. This society has surrendered to them the privilege of deciding who shall constitute its membership. This society cannot elect a man to membership. The conduct of the local societies and the character of the men elected to membership by them will be reflected in this society and will elevate or lower its standards in the future. One of the strong features of the new plan is that indirectly the strong societies will assist the weak. The State organization must guard the interests of the local societies and assist them when necessary. The State Society should keep in such close touch with the local societies that they will all feel its influence and each will feel its own responsibility in the advancement of the general good of the profession. There has already been established in many sections a feeling of good fellowship among the members that did not exist before. This should materially improve conditions in each locality. As the members of each society become better acquainted so will the conditions of dentistry and dentists in that section improve. We hope and believe that many of the local societies organized during the past year will prosper and increase their usefulness as time passes.

In addition to the men previously mentioned, your committee has been directly assisted in this work by local reorganization committees through the state, to the number of about one hundred and fifty men and we think it fitting that we should at this time introduce to this society the chairman of the local committee of each local society and the president and secretary of each society.

In many cases the chairman of the local committee was elected president, therefore where the chairman of the local committee is not named it will be understood that the president and chairman are the same man.

Adams-Hancock County Dental Society.

President, E. M. Robbins, Carthage.

Secretary, Henry L. Whipple, Quincy.

Central Illinois Dental Society.

President, J. L. Hoover, Shelbyville.

Secretary, J. S. Roberts, Hillsboro.

Champaign-Danville District Dental Society.

President, H. W. Boone, Champaign.

Secretary, H. L. Minnis, Danville.

Chairman Reorg. Committee, J. Addison Brown, Champaign.
Eastern Illinois Dental Society.

President, J. W. Ritter, Charleston.

Secretary, C. G. Bacon, Newman.

Fox River Valley Dental Society.

President, Gail B. Elliott, Elgin.

Secretary, C. A. Patterson, Genoa.

Henry-Stark County Dental Society.

President, S. J. Sharp, Kewanee.

Secretary, H. M. Wolf, Kewanee.

Jefferson County District Dental Society.

President, W. H. Damon, Mt. Vernon.

Secretary, James S. Barter, McLeansboro.

Jo Daviess County Dental Society.

President, F. Stryker, Galena.

Secretary, J. J. Creswell, Galena.

Chairman Reorg. Committee, Harry C. Puckett, Warren.

Kankakee County Dental Society.

President, A. C. Willman, Kankakee.

Secretary, H. S. Schofield, Kankakee.

Knox County Dental Society.

President, J. D. Cabeen, Galesburg.

Secretary, C. L. Rork, Abingdon.

Chairman Reorg. Committee, W. J. Adams, Knoxville.

Lake County Dental Society.

President, N. J. Roberts, Waukegan.

Secretary, O. B. Smith, Waukegan.

LaSalle County Dental Society.

President, C. R. Taylor, Streator.

Secretary, L. E. Jordan, Ottawa.

Logan County Dental Society.

President, R. N. Lawrance, Lincoln.

Secretary, S. G. Hoblit, Lincoln.

Macon-Moultrie County Dental Society.

President, A. S. Waltz, Decatur.

Secretary, Edward T. Evans, Decatur.

Chairman Reorg. Committee, O. J. Eddy, Decatur.

Madison County District Dental Society.

President, C. B. Rohland, Alton.

Secretary, E. L. Burroughs, Edwardsville.

Chairman Reorg. Committee, C. C. Corbett, Edwardsville.

McDonough-Fulton County Dental Society.

President, J. D. McMillan, Macomb.

Secretary, C. B. Warner, Avon.

McLean County Dental Society.

President, B. M. Van Dervoort, Bloomington.

Secretary, J. C. Reece, Bloomington.

Morgan County Dental Society.

President, C. B. Sawyer, Jacksonville.

Secretary, W. B. Young, Jacksonville.

Peoria County Dental Society.

President, John T. Houston, Peoria.

Secretary, J. C. Murdoch, Peoria.

Chairman Reorg. Committee, William F. Whalen, Peoria.

Rock Island County Dental Society.

President, Luther W. Skidmore, Moline.

Secretary, J. W. Gluesing, Moline.

Sangamon-Menard County Dental Society.

President, Edmund Lambert, Springfield.

Secretary, E. F. Hazell, Springfield.

Chairman Reorg. Committee, O. L. Frazee, Springfield.

St. Clair District Dental Society.

President, J. K. Conroy, Belleville.

Secretary, Julian Smith, Belleville.

Stephenson County Dental Society.

President, C. L. Snyder, Freeport.

Secretary, E. H. Place, Freeport.

Chairman Reorg. Committee, E. H. Allen, Freeport.

Union County District Dental Society.

President, G. W. Entsminger, Carbondale.

Secretary, J. C. Van Ornam, Murphysboro.

Wabash River Section Dental Society.

President, J. S. Wright, Olney.

Secretary, J. M. Stephens, Robinson.

Warren County Dental Society.

President, H. W. McMillan, Roseville.

Secretary, O. M. Daymude, Monmouth.

Whiteside-Lee County Dental Society.

President, G. B. Dillon, Sterling.

Secretary, S. C. Sims, Sterling.

Will-Grundy County Dental Society.

President, S. Finley Duncan, Joliet.

Secretary, G. M. Brunson, Joliet.

Winnebago County Dental Society.

President, A. M. Harrison, Rockford.

Secretary, A. B. Culhane, Rockford.

Chicago-Odontographic Society.

President, W. H. Taggart, Chicago.

Secretary, F. H. Zinn, Chicago.

Chairman Reorg. Committee, C. P. Pruyn, Chicago Dental Society.

Chairman Reorg. Committee, J. P. Buckley, Odontographic Society.

Englewood Dental Society.

President, S. J. McCallin, Chicago.

Secretary, A. C. La Touche, Chicago.

Chairman Reorg. Committee, Dean L. Phillips, Chicago.

With these and their associates rests the future of the Illinois State Dental Society. In behalf of the Reorganization Committee and the Society, I wish to thank them for the good work they have done.

SUPPLEMENT TO REPORT OF REORGANIZATION COMMITTEE.

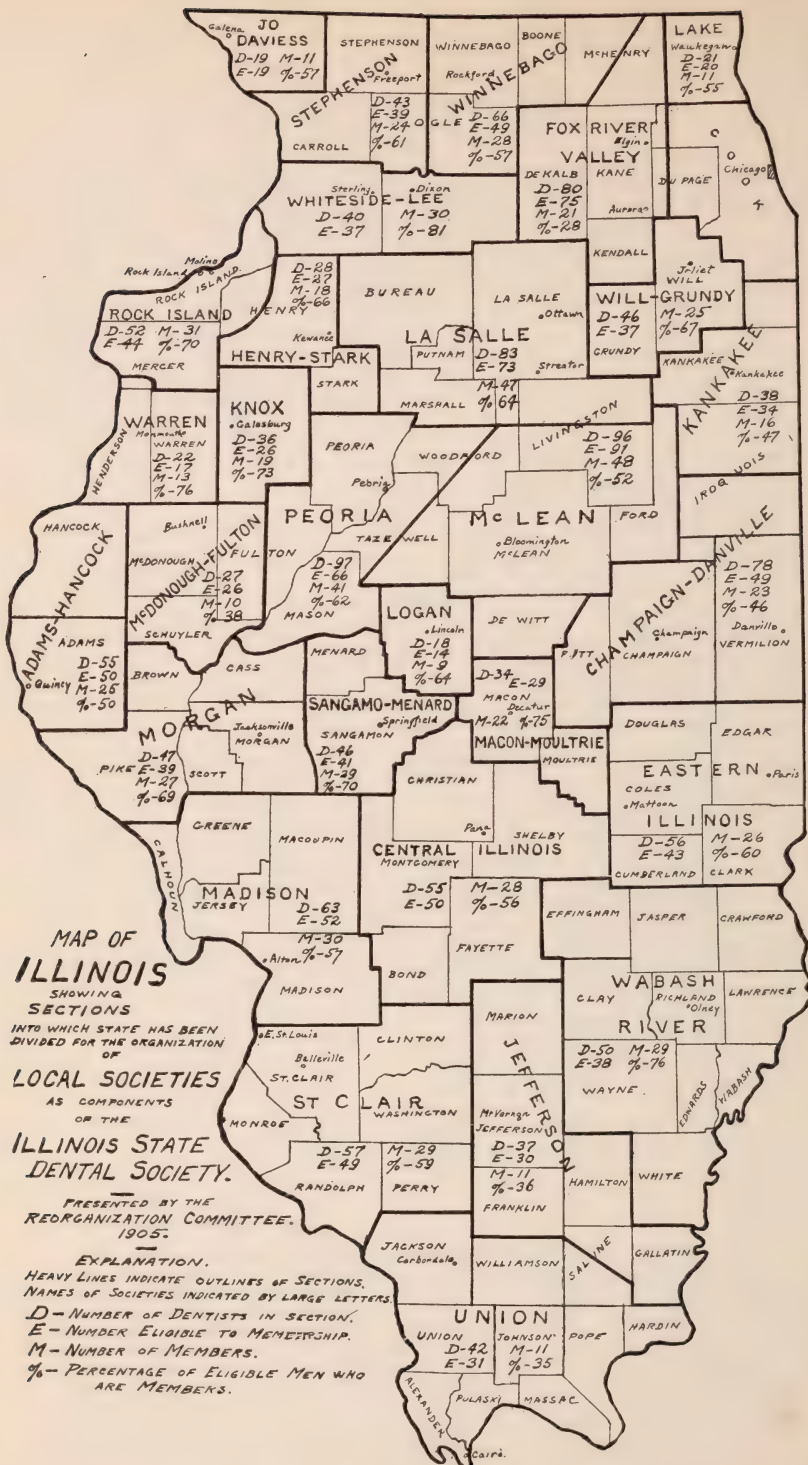
STATISTICS BY SECTIONS.

	Number of dentists	Eligible to membership.	Number of members.	Percentage of eligible men who have joined.	Number of paid memberships in same territory, 1904.
Adams-Hancock County Dental Society	55	50	25	50	5
Central Illinois Dental Society	55	50	28	56	2
Champaign-Danville District Dental Society.....	78	49	24	48	8
Eastern Illinois Dental Society.....	56	43	26	60	3
Fox River Valley Dental Society.....	80	75	30	40	4
Henry-Stark County Dental Society	28	27	18	66	3
Jefferson County District Dental Society	37	30	11	36	..
Jô Daviess County Dental Society.....	19	19	13	68	1
Kankakee County Dental Society	38	34	16	47	2
Knox County Dental Society	36	26	19	73	2
Lake County Dental Society	21	20	11	55	3
La Salle County Dental Society	83	73	47	64	10
Logan County Dental Society	18	14	9	64	3
Macon-Moultrie County Dental Society	34	29	22	75	8
Madison County District Dental Society	63	52	30	57	9
McDonough-Fulton County Dental Society ...	27	26	10	38	6
McLean County Dental Society	96	91	48	52	23
Morgan County Dental Society	47	39	27	69	11
Peoria County Dental Society	97	66	41	62	20
Rock Island County Dental Society	52	44	31	70	12
Sangamo-Menard County Dental Society	46	41	30	73	10
St. Clair District Dental Society	57	49	29	59	..
Stephenson County Dental Society	43	39	25	64	7
Union County District Dental Society	42	31	11	35	1
Wabash River Section Dental Society	50	38	29	76	1
Warren County Dental Society	22	17	13	76	2
Whiteside-Lee County Dental Society	40	37	30	81	2
Will-Grundy County Dental Society	46	37	25	67	6
Winnebago County Dental Society	66	49	28	57	5
Totals for State, except Cook County.....	1,432	1,195	706	59	169
Cook County (Chicago-Odontographic and Englewood Dental Societies	1,300*	1,000*	441	44	105
Total	2,732	2,195	1,147	52	274

Percentage of all dentists in the State who are members, 42.

Statistics in above table include a number of names received after map on succeeding page was made, and the percentages of such societies are therefore higher here.

*Estimated.



“PORCELAIN CROWN AND BRIDGE WORK FROM PRACTICAL EXPERIENCE.”*

BY DR. T. G. PATTERSON, GENEVA, SWITZERLAND.

My object in presenting a paper before this society on such a well known subject as “Porcelain Crown and Bridge Work” is not that I am offering to its members anything new or original, but more to bring out certain points of discussion relating to this work, namely, the use of bands and saddles. These two points I have never heard discussed at any meeting of this society that I have attended. Being extremely enthusatistic on porcelain crown and bridge work, I also wish to show what with me have been the most practical methods, after having tried many of the systems that have been presented to us in the last five years in work of this character. Many dentists have remarked, “Why attempt porcelain crown and bridge work when just as good results by easier methods can be obtained with gold crowns and bridges?” That today is a disputed question among porcelain crown and bridge workers, with plenty of able advocates trying to sustain their respective methods both by argument and demonstration. The principal reason that I so strongly favor crowns and bridges of porcelain is that it is nearer the ideal, especially from an artistic and hygienic point of view. What is more disgusting, and, in fact, almost barbarous, than the hideous display of gold crowns, that we see in every part of the mouth, especially anterior to the molars, these crowns being placed irrespective of indications or conditions? For porcelain crown and bridge work the conditions are numerous, and the detail part of the work most important, and I assure you it requires more than reading dental journals to obtain a knowledge of all the requirements from beginning to end. It can only be learned by the hard knocks of experience, which includes failure after failure, greatly at the expense of grey hairs and loss of adipose tissue. Not wishing to go into the detail and requirements on paper, I have thought it a better way to demonstrate what with me has been the most practical methods, by showing the work on

* Read before the American Dental Society of Europe, Geneva, Switzerland, April, 1905.

models, and have prepared five cases or examples, each with the crown and bridge unfinished. Kipling has said, "To realize the amount of work in constructing a New York skyscraper is to see it in the skeleton before completed," and I think this applies equally to porcelain crown and bridge work. The five examples consist of a bicuspid crown, two examples of molar crowns and two of bridges, one with a saddle and one without. With the six anterior teeth in porcelain crowns I have been most conservative, as there I have had the greatest number of failures, apparently from not having sufficient strength in the added porcelain to the facing. I have never attempted, for any of the six anterior teeth, an all-carved porcelain without a facing, although the most beautiful crowns I have ever seen were all porcelain, carved upper central incisors, made by Dr. Spring for a patient of his who has been in my hands for the last few months. For bicuspid crowns the most satisfactory crown I have found to be the Richmond style of crown, with a very little of the platinum showing on the labial side. I have never seen in this style of crown a facing break away from the porcelain. For molar crowns, two methods have proved the most satisfactory—one, the all-carved solid porcelain crown without a facing, the other the crown made by employing a saddle back tooth, from which very satisfactory and artistic results are obtainable.

In making this style of crown, and also others, where the bite is extremely close, I have employed Dr. Jenkins' new Prosthetic Porcelain most satisfactorily. But for large, solid, all-carved crowns, and all bridges of porcelain, I have always used S. S. White's High-Fusing Porcelain with very good results in every way. For porcelain bridges the two points of discussion—bands and saddles—that I referred to at the commencement of my paper, are brought out. I particularly wish to ask the members of this society to discuss them freely. I always employ bands, and think the reason why they are so frequently condemned is because the root has not been properly prepared, and too much platinum was employed, or the band made too wide on the labial side at the cervix of the tooth. I do not think porcelain bridges of more than three and four teeth should be attempted, and I have yet to see a failure where saddles were employed, if the saddle, after being stamped out, is properly adjusted

in its position between the two platinum caps in the mouth, previous to taking the final impression in plaster. These methods are what I have found practical with the least chance of failure. In conclusion, I wish to say that it is surprising what a small percentage of dentists make crowns and bridges of porcelain, and I think the dental colleges of America should require of a student in his last year to make a practical case of a porcelain bridge of three or four teeth. There the student would have a much better idea of the artistic effects in dentistry, and we would see less display of the horrible appearance of the all-gold crowns so commonly seen, especially anterior to the molar teeth. This society is greatly indebted to such able porcelain crown and bridge workers as Doctors Jenkins, Mitchell, Spring and Griswold, who for many years have taken the initiative in this line of work in Europe.

"A NEW IDEA IN THE REPAIR OF BRIDGE WORK."*

BY DR. G. O. WEBSTER, BERLIN, GERMANY.

Of the one who wrote:

"The trifles of our daily life,
The little things, scarce worth recall,
Whereof no visible trace remains,
These are the mainspring after all,"

I am an ardent disciple, else I should hesitate to dignify with a paper so small a thing as I have to offer you. In attempting to recall the memory of any dental gathering long past, we are apt to find that while we retain an indistinct recollection of papers and demonstrations and a certain undefined, misty memory of banquets, handshakes and general good fellowship, which fortunately form such a large part of our coming together, the thing *that sticks*, that remains with us to mark that meeting, is usually some little mechanical idea which is appropriated and becomes of use to us in our daily practice.

If I succeed either in giving you such a hint or even in provoking a discussion which shall bring out individual methods of

* Read before the American Dental Society of Europe, Geneva, Switzerland, April, 1905.

practice in bridge-work repair, my most sanguine expectation in presenting this short paper will have been more than realized.

One of the most perplexing problems entering into the life of the busy operator is the replacing of fractured facings on bridge work. It, unfortunately, nearly always happens that these cases come to us at most inopportune times, and in the particular conditions of which I shall treat, viz.: the replacing of facings on the six anterior teeth, invariably demand prompt attention, and with your own or the patient's time too limited to admit of the removal and remaking, and especially if the bridge is extensive and involves several attachments, the problem is complicated, and one in which I think I am safe in assuming we all are inclined to temporize.

Nearly all fractures of anterior facings arise either from insufficient protection of the incisal edge at the time the bridge was originally made or from the wearing down of this metal protection during years of service. In either event, the condition is practically the same and is extremely unfavorable for the replacing of the facing under the ordinary methods because the incisal edge remains unprotected and invites recurring disaster and a disheartened and often angry patient.

Some very practical and ingenious methods for the replacing of facings have been suggested, but in every instance, so far as my memory serves me, any stress upon the incisal edge must be borne by the porcelain or pins, either, or I should say, both, too weak to bear the necessary strain.

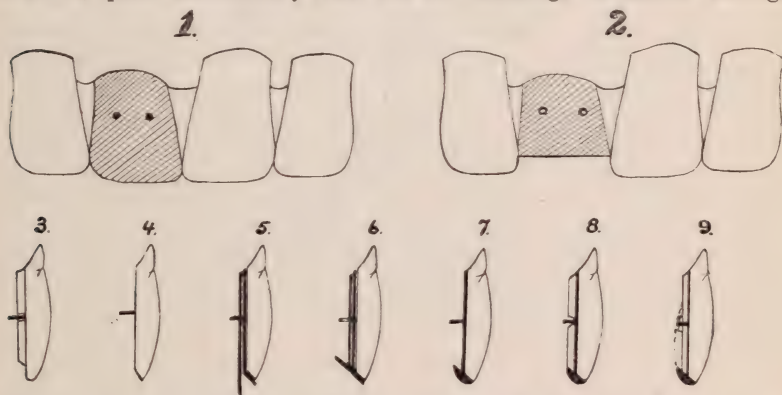
I trust I am warranted in believing the idea I have the honor to suggest to you is both new and simple in its adaptation and strong enough to withstand any reasonable stress, and lest I should appear not over modest in my claims for the method, I think it best to assure you at this early date that the idea is not my own, but was stolen bodily for the benefit of my confreres of the American Dental Society of Europe.

A typical case is presented in Fig. 1. The loss of facing from right upper central. Backing worn thin and affording little or no protection to the facing. Remove any remaining porcelain. Cut off and drill out the old pins. Then cut liberally from the lower edge of the old backing until you reach fair thickness (Fig. 2). Bevel

this edge towards its palatal surface until the new facing will approximately bear the relation to the backing shown in Fig. 3.

Selecting facing of correct size, form and shade, grind to fit. Bevel the incisal edge (Fig. 4). Use pure gold, platinum or crown metal for backing and rolled as thin as you are capable of soldering. Burnish your backing well over the cutting edge, and, without bending the pins, add a second piece of backing (Fig. 5).

Now place the facing in position and burnish this second piece of gold back to fit the bevel already made upon the bridge (Fig. 6). Remove, invest and flow solder upon the incisal edge thick enough to afford ample protection to the facing, at the same time allowing it to flow down between the two backings and around the pins. It is, however, quite unnecessary that the two backings be united through-



out their entire surface. When properly finished you will have a facing presenting the characteristics of Fig. 7, which, when cemented into position, gives a thoroughly well protected edge and one in which the stress incident to mastication is exerted in such a direction that a decided amount of force is necessary to dislodge it (Fig. 8).

As to what shall be done with the pins, I have nothing new to offer. Personally I prefer to cut a slot between the two pin holes, bevelling this opening from the palatal aspect and convert the two pins of the facing into a staple, as suggested at our Stockholm meeting, as adaptable in replacing bicuspid and molar facings. In one case when there was a depression in the backing posterior to a lost facing which presented itself to my esteemed friend and your col-

league, Dr. Watson, to whom all credit is due for anything of value in this paper, where he carried the idea of staple and pin a step further, and, after cementing to place and driving a pin through the staple, cut out some of the cement and filled the depression with gold. (Fig. 9.)

You may use the Bryan method, or even bend the pins into a depression already prepared; it makes little difference, as there is practically no strain upon them.

The idea will at once suggest itself that by this method you will have added thickness and hence prominence to the new facing. This is actually true, and doubtless there are some cases where it will not apply, but in practice the difference is not as marked as one would think, and can in many cases be much reduced, if not entirely done away with, by grinding enough from the old backing or the facing, or both, to compensate for the additional backing, for you must bear in mind that you may make the new facing as thin as you please, as you are not in any way dependent upon it for strength.

I only want to say in addition that in my own work I always make these pins into a staple. If you choose to bend the pins so as to put the facing on with a full length pin, you can see that it would strike the bevel so that there must be a little latitude in the play of the pin. You will find it necessary to put the point in first and then it locks on to the backing.

THE PRESENT CONDITION OF PORCELAIN IN DENTISTRY.*

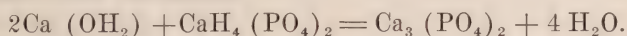
BY DR. N. S. JENKINS, DRESDEN, GERMANY.

At our meeting last Easter, in Hamburg, many of us saw, for the first time, a so-called porcelain cement, which was announced by its inventor as a material destined to supersede the use of porcelain melted in a matrix. Naturally, upon my return from Hamburg, I submitted this product to practical use and chemical analysis, with the following results: In the mouth this cement presents, at first, a pleasing appearance, having a certain translucency, and, if the

* Read before the American Dental Society of Europe, Geneva, Switzerland, April, 1905.

color is well selected, it is scarcely to be detected in the beginning, but it soon loses its exterior gloss and is gradually dissolved by the action of acids. It is brittle and liable to cracks. It will not bear the strain of mastication. It has little adhesion to the walls of the cavity and cannot be contoured in any considerable degree.

Its composition shows that these defects are inherent. This cement is formed through the mixture of a powder and a fluid. The powder consists of lime and pulverized silicate. The chief ingredient of the fluid is monocalcium phosphate. By mixing these ingredients tricalcium phosphate, which is found in natural teeth, is formed, united with the silicate.



The silicate contains silicic acid, aluminum oxide, lime and some alkali. They are mixed in the proportion of 56 per cent silicate, 44 per cent lime. The fluid possesses 64 per cent monocalcium phosphate and some silicic acid. Monocalcium phosphate is obtained by the action of sulphuric acid upon bones. The colors are seemingly obtained by the use of various colored lime, such as is found throughout nature, as in marble, for example. By adding more or less hydraulic lime the silicic acid could be accounted for. It requires no great familiarity with the subject to understand that such a compound would hardly possess great stability, either in or out of the mouth, and yet innumerable dentists have been fondly supposing that here was, at least, a short and easy way of making natural and enduring restorations in decayed teeth. There is not, and possibly never will be, a simple and easy method of perfect restoration; and it may perhaps be better, both for patient and doctor, that such a way should not be found. The harm which is occasioned by the reckless lowering of the standard of skill and caution requisite in working upon vital organs is incalculable. It is in the interest of the patient that dentists should become, not less, but more skillful. It is for the interest of the dentist, indeed it is indispensable for the very existence of dentistry as a profession, that the restoration of diseased teeth to usefulness and beauty should require the highest qualities of mental and technical training.

It is largely for this reason, perhaps often existing unconsciously, that the use of porcelain is becoming more general. To

make a perfect porcelain restoration is possible for any capable operator, but, even with the most skilful, it is slow and delicate work. Think how hard it must ever be to a man who has given his best years to elaborate gold filling to reverse his methods, change his habits of thought and contend daily with new problems. The experienced gold operator often comes to do much of his work automatically. When he begins to make porcelain inlays he no longer possesses that calmness of mind which was formerly his. Every case is a separate study. How shall he make his approaches? What shall be sacrificed and what retained? In what way shall he gain the indispensable space and the equally indispensable depth and form of the cavity? How shall he get polished edges in obscure positions? How shall he make sure that the occlusive edges will withstand every force? How shall he blend his colors until complete naturalness is obtained? What precautions must he take to gain exact edges and restore perfect shape in fusing? Where shall he groove his inlay and how mix his cement to the most desirable plasticity for each case; and how keep, when setting his inlay, exactly the right elastic pressure at just the right point for the right length of time? These, and many other considerations, will keep his mind alert, sometimes distractingly so, until he longs for the more peaceful methods of the past. For there is no question that, to make the perfect porcelain restoration requires more thought, more skill and more time than a similar operation in gold; but, on the other hand, when completed, it is far more satisfactory to both patient and operator, and, although only made perfect by the exercise of higher intelligence, has still been achieved by a less nervous and physical strain. Of course, there are all varieties of porcelain workers, from the one who only occasionally, and from esthetic considerations alone, makes an inlay, to him who finds this work at once so fascinating and so satisfactory that he rarely uses any other method. Indeed, the most convicted and capable operator in porcelain is constantly surprising himself in achieving new triumphs with his favorite material. Its interest never flags. Every day some new phase of the work presents itself. Every operation is a fresh and valuable experience. But alas for him who grudgingly and unwillingly and ignorantly does this work. He finds a thousand lions in the way.

If he has not grasped its steadfast principles and is unconvinced of its practical and esthetic possibilities, if he has not the patience essential to overcoming its difficulties, nor the imagination which kindles to enthusiasm, then not even the hope of higher reputation, nor of increased usefulness, nor of a larger income will lead him to the goal.

All this is equally true of porcelain prosthesis. If we will, we may now be completely emancipated from Logan and Richmond crowns and from the gold bridge. It is within the power of every able dentist to make crowns and bridges which are stronger and more cleanly than any ever made before and which defy detection. Size, shape, color and indestructibility are all at our command. The great manufacturers have given us such variety of form and color that we have only ourselves to blame if we fail in lifelike restoration. I beg to present to your inspection some duplicates of practical cases which illustrate my meaning. In particular, I beg to call your attention to a bridge for the lower jaw, in which you will see, first, the skeleton, and then the completed porcelain bridge. Three gold bridges were made for this case, at intervals of six months, in various parts of the world, and all seem to have failed because of using a gold crown on the cuspid for attachment. I sacrificed that crown and so at once secured a better appearance and an unbreakable support. The stout root is countersunk and a cap of 10 per cent iridium platinum stamped to fit it exactly. There is no band, but a hammered post of 20 per cent iridium platinum fits the enlarged pulp canal. A heavy 20 per cent iridium platinum wire, bent, where necessary, at a white heat, is securely soldered to the strong molar iridium platinum crown, and, deeply impinging on the gum, is soldered at the other end to the cuspid cap and post. Then flanging, contoured 10 per cent iridium platinum plate sides are soldered to the wire, to the molar crown and the cuspid cap, forming an elongated lidless box into which porcelain may be securely fused. Examine this skeleton and tell me if it is conceivable that it can break or bend under the strain of mastication. In the completed bridge the skeleton is entirely concealed by porcelain. The crowns are fixed in their places by prosthetic porcelain which flows over the sides of the skeleton down to the iridium platinum wire, which

presses firmly upon the gum. This bridge is made for a lifetime, and, if in the course of years, the gum should become somewhat absorbed, you will see that it will still be possible to keep it perfectly clean. Here is the entire mechanical secret of making perfect crowns and bridges. Exact fitting of appropriately strong supports; strength and adaptability may be best obtained by indicated alloy of iridium platinum ranging from 10 per cent iridium in plates and bands to from 20 per cent to 30 per cent in posts and connecting wires. Porcelain facings or crowns, reinforced by prosthetic porcelain, which can be made to flow in such bulk as one may desire exactly where one pleases and at a temperature which will not distort nor warp the iridium platinum base.

These materials, intelligently united, may be used by any competent dentist to produce results incomparably superior, in all respects, to any work which can be done in gold.

I do not say that especially skilful and experienced manipulators of high-fusing porcelain can not obtain similar results, although I believe that even they will find this way more desirable, but I do say that the great majority of practicing dentists can, through this method, reach the highest practical and esthetic achievements and do more to place our profession upon a higher level than a small body of special experts, who hitherto have remained objects of hopeless admiration to the great body of practitioners.

CARDIAC ASTHMA COMPLICATED WITH SUPPURATION OF THE PAROTID GLAND.

BY W. P. M'GIBBON, M. D., CHICAGO.

Mrs. S. S. B.; aged 65; Pennsylvania Dutch; came under observation twenty-one months ago, suffering with marked cardiac asthma. She had always been unusually active and had taken heavy responsibility; but was always well. Has had five or six children.

Examination revealed: Diagnosis, chronic myocarditis; dilatation cordis; compensatory hypertrophy insufficient. Continual cardiac stimulants were given, namely, strychnia, digitalis, strontium iod., crataegus, etc., with as much rest in bed as she could be induced

to take, and a selected diet rendered existence comfortable except for irregular attacks of cardiac asthma, dyspnea, and reflex cough, when absolute rest would be compulsory. Gradually the cardiac capability became less, the attacks of dyspnea more severe, until January 1, 1905, patient was unable to leave her bed. The cardiac condition was so bad that excessive stimulation was demanded and cough sedatives were required early in the attack for a very persistent cough, undoubtedly from irritation of the left recurrent laryngeal nerve. The patient gradually grew worse, and after about six weeks hypodermic medication became necessary, in addition to medicine per ore. The patient complained much of dryness of the mouth, even before atropine was exhibited hypodermically, and this condition became gradually worse, so that ice was kept almost constantly in the mouth.

About two weeks before death the patient noticed a small swelling at the outer lower edge of the angle of the jaw, about one inch from the ear. The swelling was hard, as large as a small hickory nut, and the patient thought it was "a swelling of the jaw bone." Examination showed it movable over the bone and under the skin, but quite hard. The supposition was that it was an isolated submaxillary adenitis. The gland continued to enlarge upward toward the ear, and backward under the ear, until the entire region of the parotid gland was involved, the mass being exquisitely sensitive and painful. The skin was normal in appearance, except tensely drawn, smooth and shiny, for a number of days, when it became cyanotic under the lobe of the ear between the mastoid process and the angle of the jaw. The cardiac condition threatening death at any moment, almost nothing except palliative measures—moist heat—was attempted, until external rupture of the suppurative parotid was imminent. Intra-ore examination revealed a drop of thick yellow pus at the orifice of Steno's duct. Pressure from the tragus of the ear along the duct squeezed out quantities of pus of the character as above. A small silver probe was passed several times to the substance of the gland without encountering any obstruction whatever; in fact, the duct seemed at all points, mouth included, more patulous than usual. In the course of three or four days it became necessary to incise the mass beneath the ear. This was done under local use of ethyl chloride, and a large amount of pus was evacuated. The sec-

ond day thereafter the abscess ruptured spontaneously into the external auditory meatus and literally flowed out over the ear. Examination of the ear showed marked congestion in the region of the membrana tympani, and a large venous bleb in the innermost external auditory canal in the inferior anterior quadrant. Rupture of this caused profuse bleeding from the ear. Before this the patient complained—but for only an hour or so—of earache. The rupture into the external auditory canal occurred undoubtedly through one of the incisurae Santorini, as the opening was located at the usual site of one of these incisurae. Twice daily the pus was evacuated forcibly as much as possible, and drainage was kept in continuously. The patient had much difficulty in swallowing for several days, but would not allow a careful examination of the throat. A cursory view obtained, however, showed pus over the surface of the tonsil. Whether it was what had run back and down from the duct, or had broken through at that point, is impossible to say. The skin shortly became red over the superior portion of the sterno-cleido-mastoid muscle, and a fluctuating mass could be discerned on the outer side of the muscle and extending almost to the clavicle. The bowels had been very regular, and latterly any irregularity was easily overcome by the use of sulphate of magnesium. There was some edema of the lower limbs, lateral abdominal walls, and slight edema of the upper extremities existed before the glandular swelling occurred, and synchronously with the parotid initial swelling there occurred edema in the loose structures under the chin. At this time digitalis was given, and this latter edema entirely disappeared, and in other localities diminished and was held in check. Just previous to the gland involvement there had been almost total renal suppression, which, however, was overcome with the ingestion of the digitalis, and also this seemed to relieve to some extent, but not entirely, the dryness of the mouth.

Death occurred from cardiac failure.

The undertaker reported to me that in embalming he took up the common carotids below the notch of the sternum and found a sac down under the superior one-third of the sternum from which he emptied a large amount of pus

MICROSCOPIC REPORT.—Smear examination negative, except a few fat globules and disintegrated pus cells. Blood serum cultures gave homogeneous yellow growths along the line of contact and a

large number of fields under the microscope revealed only staphylococci, indicating a pure culture of these cocci. (Carbolic acid applied within the pus sac before pus for examination was obtained may have had some effect upon the growth or the nonpresence of other infective organisms.)

The features of this case were the suppurative process of parotid gland, not accompanying any acute septic or infective disease, and also the exceedingly rapid pus formation and disintegration of tissue. This latter probably because of the non-resistant condition of the tissues due to poor circulation, spanemia and poor nutrition, and also the marked tendency to general edema, to swelling and infiltration of the tissues.

CROWN AND BRIDGE WORK.*

BY G. E. FRITZ, D. D. S., PEORIA, ILL.

Mr. President and Members of the Peoria Dental Society:

The subject that I have been asked to write about ought to interest every practitioner of dentistry, because of it being so extensively practiced.

I perhaps can not tell you anything you don't already know about this phase of dentistry. However, I shall endeavor to impart to you some of the principles that are essential to esthetic and hygienic crown and bridge work, and thereby create a discussion that may result in our putting this branch of dentistry on a higher and more ideal basis.

Ever since the primitive application of crowns described in Fouchard's works, published in 1728, up to the present time, there has been a gradual development, from the bone, or ivory carved crown, to the highly vitrified porcelain, and even today there is vast room for improvement, which we all realize.

Crown and bridge work as it is practiced by the injudicious or conscienceless practitioner is being greatly abused, and thereby creating a feeling of prejudice in the minds of patients so that you often hear the remark when a bridge is indicated, and you recommend

* Read before the Peoria County Dental Society.

such, that so and so had bridges, which gave them perpetual annoyance and discomfort, and eventually they had to be removed.

The success of crown and bridge work in the various phases of their application, and the degree of permanency in the operations, combined with the esthetic result obtained, depend upon a close adherence to the requirements from a physiological, anatomical, mechanical and esthetic standpoint.

Pathological conditions should be removed before proceeding, whereas little or no attention is sometimes paid to such conditions. If the peridental membrane is affected, it should be properly treated.

A crown or bridge usually invites peridental disturbances, and therefore we should fortify against any such serious disorders.

As the line of greatest resistance is in the vertical direction, every provision should be made tending to prevent undue and unnatural stress, which might ultimately cause displacement, peridental disturbances, or possible loss of the root.

The degree of usefulness and longevity of the artificial substitute depends greatly upon the formation of the articulating surface.

The evils of faulty and imperfect occlusion are often apparent and frequently result in marked manifestations of peridental and neurotic troubles.

The approximal contact point is also of great importance. If the band is not so conformed as to result in perfect contact with the adjacent teeth, we will have a pocket here for the reception of food particles, with the result that putrefaction and the formation of mephitic gases will cause a condition of irritation that usually accompanies a crown of this kind. I have seen crowned teeth that were affected with suppurative conditions, whereas every other tooth in the mouth was perfectly healthy, which shows conclusively that an ill-constructed crown is often the exciting cause of this virulent disorder.

The relation existing between crown and root is of the greatest importance, because the ratio of failures, or trouble arising from progress of caries or from gingival and peridental irritations is decreased in proportion to the degree of accuracy in the adaptation. The crown should be adapted firmly to the root, and if no band is used, the adaptation should be close enough to make a joint abso-

lutely impervious to the secretions. When a band is used, it should pass under the free margin of the gum a uniform distance on all surfaces.

The esthetic relations embrace a field which gives the greatest possible scope to the individuality and artistic temperament of the operator.

To secure the highest artistic results the artificial crown should preserve the gingival outline, and the symmetrical alignment should be proportionate in length with the adjacent teeth, and, if of porcelain, should closely match them in color, and correspond favorably in general form and characteristics with its fellow members on the opposite side of the arch.

In the entire subject there is probably no one distinctive feature of such intrinsic importance as the practical scientific and skillful preparation of the remaining portions of crowns and roots for the reception of artificial crowns.

While the preparation is arduous, tedious and difficult, you will be duly recompensed with the success and comfort your patient derives therefrom, if the requirements are closely adhered to.

Any neglect to carry out the essentials would soon manifest itself, not alone in evidence of failure, but in serious discomfort, accompanied by the various stages of inflammation.

To secure closest continuity between crown and root, the remaining walls should not merely be parallel, but slightly inverted, so that the band may fit more closely as it is pressed root wise, and thus prevent its edge from being forced into the gum tissue, instead of under the free margin.

Clinical experiences teach us that the safest procedure is to devitalize teeth before crowning them, as otherwise the irritation renders such teeth susceptible to a slow, but often complete destruction.

The somewhat common practice of placing gold crowns on teeth within the range of vision is a violation of all traditions of art, and must be most vigorously condemned. No matter how skillfully executed, the conspicuous appearance of gold crowns is an offense to art, culture and refinement, and is evidence of barbaric vanity.

Gold crowns should not be used anterior to the molars. Their application is usually contraindicated in view of the more artistic

and esthetic means available. Any exception should be based only upon a conscientious consideration of the existing conditions, and practical requirements of the case, otherwise their application should be regarded as an unpardonable offense.

Even though we observe, and skillfully execute the details of crown and bridge work, we have not as yet mastered the art of reproducing lost dental organs, without causing some manifestations which are evidences of unnatural conditions.

I have heard of self-cleansing bridges, but have never had any come under my observation. Mostly all bridges of any size have depressions and pockets for the reception of food and secretions, and here we have the formation of putrefactive gases which make them very offensive.

And as we are confronting these problems that in some ways seem perplexing, in this twentieth century, we have hopes of improving the practice of dentistry to the extent that our results will, in a far greater degree, be in harmony with nature.

OUR BRIGHT VS. OUR DARK DAYS.*

R. C. HOMER, D. D. S., PEKIN, ILL.

No doubt there come days in the lives of all members of our profession, when it seems that the verse from Scripture, which reads, "Man that is born of a woman is of few days and full of trouble," must refer particularly to dentists and to one poor dentist most particularly. Perhaps the fault may not be in our profession but in ourselves. However, it is human nature to blame something or somebody rather than ourselves, when things don't go right, and our profession being ever with us, we shoulder the blame off on it. We may have overslept a half hour or more and are proportionately late reaching the office, where our neighbor across the hall informs us that several people had wanted to see us but could not wait, and the last one had just left a minute ago. We feel a sense of loss, but, having a goodly list of appointments, we don't mind very much. The hour of our first appointment comes, but the expected patient does not; in-

* Read before the Peoria County Dental Society.

stead, old Mrs. A. drops in to inform us that while chewing some soft bread a day or two ago, she had broken two teeth off the plate we made a few weeks or months ago. It seems to us that the plate had been dropped or something else had happened to it, but we hardly like to suggest it, because, well, you being dentists, understand why. If the lady had said she dropped the plate, of course that would have been her fault, and we could charge her One Dollar per tooth, but chewing soft bread, it is our fault, and we are "it." Now comes a man whose mouth and teeth resemble nothing so much as a lot of mossgrown and leaning tombstones in a long-neglected graveyard. He wishes a tooth pulled and wants something used so it won't hurt him. Having had a long succession of satisfactory extractions of late and beginning to look upon ourself as a second Nevius, we assure him that we can certainly come as near pulling the tooth painlessly as the next "one." We then examine the offending tooth and find it is a lower third molar, decayed deep down into the roots, leaving a mere shell. We inject the anaesthetic or prepare in some way, shove the beaks of the forceps down as far as we can, which unfortunately, isn't very far in that broad and thick portion of the inferior maxilla; and with a prayer for help, we pull, not the tooth, but a few pieces of the crushed crown, and the roots, oh, where are they? Alas, they are way down deep in the bone. The patient grabs his jaw, groans, and spits blood all over everything in range.

We make several attempts to achieve the impossible and are finally compelled to dismiss the long suffering man, assuring him, that since we didn't get the tooth out, we couldn't think of charging him anything; so we lose the half hour and the half dollar. As he goes out he shows his appreciation by telling us, that so and so, whom we know to be a fakir, used electricity on his neighbor's wife and pulled seventeen teeth without hurting her a bit. Useless to waste time telling him that there are teeth, and then other teeth. To him a tooth is a tooth, regardless of location or condition. By this time, the hour for our next appointment has come around, and we are called to the 'phone and informed that Miss B. is indisposed, being so fatigued and nervous from our working for her yesterday. She will come some other day when recovered from her nervous shock.

Now comes an old gentleman of wealth and influence and a long list of relatives in the same enviable position. On an evil day, some

time since, we took a two hundred to one shot and made plates for him, trusting we might do better than any of the numerous other dentists who had worked for him, and by pleasing him, get a line on the afore mentioned long list of relatives. He is only getting along tolerably well. This is not to be wondered at since his upper gum and palate is flat and clammy, with a nice hard ridge down the center, about the size of our thumb, and his lower teeth have been out so long that the lower gum and process are all absorbed and about as flat as our opinion of ourself is rapidly becoming. We look wise and discover the plates are too high here or pressed too hard there, and so forth. Then to the laboratory and file and scrape a while. Then we try them in again and enthusiastically discover great improvement. They do seem to stick a little better, helped perhaps by a little gum tragacanth, and the old gentleman goes away, and we, while not wishing him any harm, fervently hope we may never see the good old soul again, this side of eternity at least, and by that time he may have forgotten the matter, since the imperfections of our tenement of clay don't count over there and he won't need teeth.

As if all the foregoing were not enough, now comes the last straw. Mrs. B., for whom we made a large bridge, of which we were particularly proud, as it was well made, artistic, and good in every way, comes in with a facing crushed off. She is so sorry, but, unthoughtedly, she bit some very hard candy a little while ago and crushed the facing. She does have the grace to say she knows it was her fault, but that doesn't get the bridge off. So we must cut the bridge loose which causes us much weariness and vexation of spirit, to say nothing of that endured by the patient while a well-set bridge is being cut and broken loose from the cement. Thus, things go from bad to worse on this dark day in our experience, until, when night comes at last, we are in a state of nervous collapse and are thinking with envy of boyhood's happy days, down on the farm; and wishing we were there again, never more to roam. But at last, with a sigh of relief, we lock the door, and if we are wise we lock our business worries in as well, and do not carry them home with us. After a good supper, we feel somewhat braced up and are thankful that we are not as some other men who have to hustle back to the store or office for a few more hours of grind. So ends our dark day, unless perhaps we may get one last jolt of being called to the 'phone and informed that Miss

C's tooth in which we had sealed arsenic during the afternoon is aching worse than ever; what shall she do? At last, to use a slang expression, we crawl into the hay and draw the curtain on this long dark day.

Next morning we awaken betimes, rested and refreshed, and the world seems bright and cheerful again. We arrive at the office in good time; our patients put in a prompt appearance, and we accomplish a good day's work. Several new patients come in and our appointment book is filled up some days ahead. Two or three come in and pay their bills. Perhaps the new patients tell us that some of their friends, for whom we have worked heretofore, have recommended us to them, being well pleased with our work. At odd times during the day, we have replaced the teeth upon the plate of Mrs. B., and perhaps have soldered up the cruel rents and ground a new facing for that bridge and it hasn't been so bad as we feared. Thus the day passes and we are surprised when closing time comes, so quickly has the time flown. And it is so with all busy and successful days, in sharp contrast to the long and seemingly never ending dark days. We are glad now that we are a member of the profession which has so many advantages. The evenings our own, with consequent time to improve our minds by reading or studying if so inclined, or for recreation. On yesterday, we were inclined to believe that all the troubles in the universe were heaped upon our individual shoulders. This evening after a good supper, with our feet propped up and a good cigar, we are pervaded with a genial glow and sense of well being. We think we didn't make a mistake after all in our chosen calling, and memories of boyhood's happy days down on the farm do not appear so rose-colored as on last evening. We remember the long hours of hot and dusty work, the little recreation, the early going to bed to get rest ahead for too early rising, etc. We remember that people in all branches of human endeavor have their dark days also, and many of them far darker than the worst of ours can possibly be. Then it is a source of satisfaction to know that it is in our power to ease and relieve human suffering of which we do a good deal, despite the fact that the general public look upon us as past masters of the general art of torture. Sometimes we have to go to some brother dentist and take a little of our own medicine and then we realize that perhaps people have good cause to look upon a visit to us with fear and trembling.

In conclusion, we find that all human life is made of light and

shadow. "Into each life some rain must fall, some days be dark and dreary." We realize that it is through no fault of our particular profession that it is so, though on yesterday we were inclined to believe it was. We must take the bright and the dark days of our professional life as they come, doing the best we can with the troubles and vexations of the day; if we have made mistakes, rectify them as cheerfully as may be; and when the last day of our professional life draws to a close, may it be truly said of us (though in a different sense, we trust) what his fellow cowboys placed as an epitaph upon the tombstone of one of their number who had gone to his final roundup, "He did his damndest, angels could do no more."



PROCEEDINGS OF SOCIETIES.

ILLINOIS STATE DENTAL SOCIETY, MOLINE, MAY 9, 10,
11, 1905.

DISCUSSION ON THE PAPER OF DR. GILMER.

DR. C. P. PRUYN, of Chicago:

Mr. President—I take great pleasure in opening the discussion upon this excellent paper. We come across these diseases very frequently, and if we will follow the instructions given us in this paper, we will relieve ourselves of a great deal of embarrassment in the treatment and our patients of a great deal of trouble. I think he has adopted a system of practice that is conservative, careful and thorough.

He uses a new term with which I thoroughly agree. He discards the term empyema of the antrum, which has always seemed to me an improper term to use. Suppuration of the antrum is the proper term. He gave the reasons why.

He spoke about the use of transillumination. The electric lamp, of course, is of great service as an aid to diagnosis. We can not depend upon it, however, to a certainty.

He mentions the fact that it is possible for carbolic acid, cassia, pyrozone and other medicines to be forced through the roots of teeth into the antrum and set up trouble there. Many dentists have seen such cases in which they have produced suppuration of the antrum in their great desire to thoroughly treat alveolar abscess.

He stated that he had never seen a case of putrescence of the antrum caused by syphilis. I have never seen but one. I had one unmistakable case of suppuration of the antrum caused by syphilis, and it was a foul-smelling case. Every time that patient came to the office it was necessary to open the doors and windows, and fumigate the office. I did not carry out the treatment to completion, as the patient finally drifted away. I was annoyed to have such a patient come to the office.

He speaks of the use of the microscope, and it is a positive necessity very often in making sure of the diagnosis, and it would

be wise if in the early history of suspected cases we procured specimens and put them under the microscope, in order to know what we have to deal with.

I differ from the author of the paper in regard to the use of iodoform. I have gotten over that. I hope I may be forgiven for the use of it in the past. It is positively nauseous; is very unpleasant, and no dentist should use iodoform about the mouth. It may be used in the abdomen or in other parts of the body; but when it comes to diseases of the mouth I should certainly eliminate iodoform, because there are remedies that do the work as satisfactorily and much more pleasantly to the patient and the operator. I pin my faith to aristol. I use moist borated gauze, and impregnate it with the aristol. The only reason why aristol is not used more in general surgery is because of its expense, but when we consider the small amount we use of it as dentists, its expense cuts but very little figure.

I agree with him that we need not open through the socket of a molar or bicuspid tooth when there is a better way, and in illustration of that I will pass around a specimen of the antrum, showing how easily it can be reached after the method he has described, and showing also the septa. This antrum has two well-defined and distinct septa. The specimen shows very well that if we do not open in by this method and curette out the septa, we will not probably succeed in effecting a cure, because we do not have a cavity that is easily drained. Simply to refresh our memories I will pass around a skull also, which shows how easily we may have trouble from the roots of the second molar as well as the first, and the second bicuspid.

I agree that the chisel is an inhumane instrument to use for such a purpose as opening the antrum. I do not see any use for the trephine in such cases. If we open into the cavity of the cranium there is a place where we might use the trephine properly, but in opening into the antrum I advise the use of the drill in every case. You notice the condition of the surface you have to work on is very irregular, and it is more difficult to hold a trephine on that surface than it is to hold a drill, enlarging with fissure burs as he recommends.

In the mistakes I have made the opening has not been sufficiently large, and in later years I have made "good-sized" openings,

large enough to admit my little finger, and to make a digital examination. In the specimen I have passed about I have made some pencil marks showing the size of the opening I would make if I were opening into the antrum.

I have never come across a case of aneurism of the antrum. It is a wise thing for us if we have a tumor of any kind, even if we feel sure of it, to insert an aspirating needle, in order to make assurance doubly sure, rather than run into a case of aneurism.

In some cases, in addition to the opening that he has suggested through the outer plate of the antrum, I have made an opening through the nose. My method is to take a pointed trocar, about the size of a small lead pencil, lift up the ala of the nose, and go backward and outward, and in the specimen I have passed around I have made pencil marks showing where the opening is made. It can be made below the mouth of the lachrymal duct. If you have made an opening into the nose, and if you rely upon it for drainage, you are not securing drainage from the most dependent portion of the antrum. I remember one chronic case of three years' standing, and in addition to making an opening through the outer plate, I made one through the nose, and I had double drainage. I then took a rubber fenestrated tube about the size of a small lead pencil, and turned the tube upon itself; that made a little bulge at the end, and this bulge was inside the nostril where it could not be seen; then the fenestrated tube was passed back through the antrum into the mouth, and ligated to a wisdom tooth. The patient could easily wash the antrum out without seeing me every day. This proved to be a satisfactory method of treatment and it is very easily carried out. This case terminated satisfactorily. (Demonstration of the method on a model.)

In cases of suspected engorgement of the antrum, where you do not feel perfectly sure and want to confirm your diagnosis, I would recommend the method Dr. Black suggested years ago. It was new to me then; I have used it many years, and take pleasure in describing it to you. Take a coarse, serrated gold plugger, dip it into carbolic acid, and put it upon the gum tissue at the point you want to open into, which is about over the root of the second bicuspid tooth, and by rotary motion work inwards; dip the instrument into a little more

carbolic acid, and use it on the tissue again until you have it anesthetized; keep on working a little more, and in a short time you can separate the tissue; you get through the periosteum readily, and you go through bone readily. Make a small opening and you confirm your diagnosis. You do this painlessly and bloodlessly.

DR. CLINTON B. HELM of Rockford:

It would seem almost preposterous for one of my limited experience with these troubles to try to discuss this paper if it were not for the fact that I was asked to discuss it from the standpoint of the dentist of the smaller towns where there are no specialists in this line to whom we may refer these cases for treatment and operation when necessary. The man of limited experience has some difficulties to contend with which the specialist knows nothing about, and I want to say a word first in regard to some of the obstacles thrown in the way of the country dentist when he attempts to treat any lesions beyond those found in the tooth itself. First, the prejudice of some physicians who feel that the dentist is encroaching on their domain if he attempts anything beyond the simplest operations on the teeth. Next, the physician who can not, or does not, cure the chronic cases of abscess of the antrum, but can throw enough stumbling blocks in the way of the dentist by creating distrust in the mind of the patient by little insinuations or open antagonism to often times discourage one who runs against his first case and is debating with himself whether or not he possesses the knowledge and skill to attempt an operation, which perhaps he has seen performed at some clinic or possibly less fortunate than that, has had to acquire what knowledge he possesses by reading alone. I do not mean that all physicians feel so toward the dentist; many of the broader and more experienced in the medical profession recognize the fact that the dentist has a place on earth, and some even refer such cases as these to the dentist, but you will find the first mentioned in almost every community and your antrum patient is just as likely to employ such a man and have the implicit faith in him which he should have in his family physician. Many patients also have a feeling of distrust if the country dentist proposes any operation beyond the limits of the teeth themselves. Most of us would be glad to refer all antrum cases to a specialist if it were possible, but in a country practice this is often impossible, and

the question arises what shall we do with them? It is natural enough for the dentist who sees at best only a few of these cases in a lifetime to shrink from an operation so entirely out of the line of his regular routine, and it is partly on this account that we see cases that have been treated in a half-hearted manner with indifferent success, and the patient becoming discouraged and the dentist satisfied as to his inability to perform a cure. By mutual consent they give up treatment and the patient worries along with the distressing condition of pus being discharged into the mouth or nose for the rest of his life. So the question arises, What are we to do with these cases? I would say to you to avail yourself of every opportunity to attend clinics of this nature; post up as thoroughly as possible in every way possible, and if you are so fortunate, or perhaps unfortunate, as to have a case of this kind present itself to you, go at it in an intelligent and thorough manner, and in most cases if you persist you will have the satisfaction of performing a cure which in itself would be reward enough for all your trouble, and here I want to emphasize thoroughness both in the operation and subsequent treatment. Two practical points in the doctor's paper appeal especially to me, as they were brought forcibly to my mind in the last case I had. One is the influence the grippe has on these cases and the other the desirability of extracting the offending tooth where one is found to be the cause of the trouble. The case I speak of was that of a young woman. The symptoms were so plain there was no doubting the trouble, and on examination found the pulp dead in the left superior first molar. The patient was very anxious to save the tooth, and was even willing to risk the chance of a second operation rather than lose the tooth without an effort to save it. The history of the case showed it to be of four or five years' standing, so after treating and filling the root the operation was made in the antrum, thoroughly curetting same. The case progressed remarkably well and while the cure seemed to be effected the case was still being watched and irrigated as the opening had not entirely closed when the patient was taken with a severe case of grippe and I didn't see her for nearly three weeks. In the meantime the opening had closed and she came back with pain in the antral region and on examination found pus present again. This time we took no further chances with the tooth and extracted it. The

three roots were fused together so it was more like a single-rooted tooth with the apical end nearly as large as the neck, and badly denuded and roughened, exactly the condition we find occasionally when we have to amputate a root to cure alveolar abscess. I believe in this case the grippe had much to do with the relapse, but that tooth would undoubtedly some time have caused a recurrence of the trouble, and I believe that much as we value a tooth, we are not justified in trying to save one that has caused so serious a trouble as suppuration of the antrum. In this case we thought it best to try to cure it without another operation, so, after making another large opening, it was flushed thoroughly every day, and, after drying, it was painted with argyrol 50 per cent solution, and it improved rapidly for some time till the opening grew too small to admit of drying and painting with argyrol, so a small quantity of argyrol was injected each day after irrigation, but the case came to a standstill for some time, till finally Lowry's Calenduline was substituted for the argyrol with most gratifying results, and the case went on to a cure. Another point I wish to emphasize is the necessity of a large opening—large enough to admit the little finger—for thorough examination, so that every part of the sinus can be easily reached. It will seem the first time that you surely will do damage by so large an opening, but the great danger is in having so small a one that there will be some little diseased area that will escape your notice and the trouble will persist in spite of treatment. The cases of greater complication of malignant growths I have had no experience with and hope I will not have, but the doctor's paper has "shown us the way" to be more cautious in our diagnosis before proceeding to operate, and I am sure you who have listened to his most admirable paper have received much in the way of caution where it is needed and, on the other hand, much to encourage you to be heroic in your treatment when such treatment is needed.

DR. W. H. G. LOGAN of Chicago:

In the discussion of Dr. Gilmer's excellent paper I find some things that need further elucidation and a single procedure where I would advise a different mode of treatment. We have been told by the essayist that the mucous membrane of the antrum differs from that found in the nasal fossa only in being less vascular and therefore

less able to resist injury and infection. That the blood supply in the submucosa of the mucous membrane lining the antrum is less abundant than in the same tissue of the nasal fossæ is a well-established fact. That this is the only difference between these mucous membranes is a statement that I am very doubtful about, for we not only find a smaller blood supply in the submucosa of the antrum, but there is a variance in the basement membrane (*membrana propria*) the genetic layer, and the character of the layer of cells here superimposed. In the nasal fossæ and mouth we find a basement membrane of a discernible thickness, while in the antrum it is difficult to demonstrate its presence. The epithelial layer in the nasal fossæ differs from that found in the antrum in its character and number of layers, these variances plus those of the genetic layer give us the important differences between the mucous membrane of the nasal fossa and the antrum. Then I would say the reason why the mucous membrane of the antrum is more subject to grave disturbances than the same membrane of the nasal fossa is its smaller blood supply, the scantiness or absence of the basement membrane and the single layer of epithelial cells which is but a slight protection against infective irritants as compared to the multiple layer of epithelial cells and dense and thick *membrana propria* which is well nourished with its abundant blood supply as spoken of by Dr. Gilmer.

I wish to emphasize the objections made to the treatment of the antrum through the nasal fossa or the alveolus. The reasons for believing that opening through the alveolus should in the main be abandoned are: First, the frequent and needless loss of teeth. Second, the uncertainty of gaining access to the lowest part of the floor. Third, the liability of missing the sinus entirely. Fourth, the removal of the diseased tissue is accomplished with more difficulty and is made improbable in many cases if the opening is not greater in size than the space occupied by one tooth. Fifth, an ocular examination of the sinus cannot be made through such an opening.

The ideal operation to control a suppurative process of the maxillary sinus should embrace the following three parts: First, an opening large enough to allow an ocular examination. Second, position of this opening such that it will afford the best natural drainage and not demand the extraction of any tooth. Third, the employment of some

non-irritating method to maintain the original opening until a normal condition of the diseased part is obtained, and by making the buccal opening in size and position as stated by the essayist you will obtain an opening large enough for proper examination and an ideal drainage.

I do not believe it best however to rely upon gauze to maintain the opening or to combat the disease for the reason that unless the antrum is well and fully packed with the gauze it will loosen and fall out and if one expects the full therapeutic effect from the iodoform gauze he naturally would desire to place it in contact with the diseased tissue, and it must be placed with firmness to prevent its escape; and since where an absorbent substance is brought in contact with a diseased secreting membrane we will have the irritating secretions passing into the gauze and in a short time the packing becomes a highly irritating substance instead of the germicidal agent we desire, and in the daily removal of this putrescent gauze I believe we interfere with the new forming cells upon this soft tissue lining the antrum. I believe it is wiser to maintain this buccal opening with a gutta percha plug which has a flange on its anterior, superior and posterior surfaces with a groove on its inferior surface to allow of escape of the irritating secretions; the cheek will hold such a plug in position if properly constructed without irritation to the cheek or the opening into the antrum.

In those exceptional instances where the gutta percha plug is not retained by the cheek, fit a removable band about the crown of an adjacent tooth having soldered upon it a bar which extends to the gutta percha, holding it securely in position; have the band just tight enough that it may be removed with ease but not coming away of its own accord. As the diseased condition improves within the antrum reduce the size of the plug, but for fear of recurrence do not discard it entirely until a week or ten days after the normal state has been reached.

In regard to irrigation of the antrum, after you are sure of the diagnosis, do not use irritating substances, as you destroy the cells that you want to live, and until the mucous membrane has upon it epithelial cells, without secretions passing over it, the membrane will not be normal. And that is one reason why I object to the use of gauze, for fear that it will disturb the forming cells. In the irriga-

tion of the antrum have the patient carry the head a little forward and to the side. I prefer to use a syringe out of which I can get a great deal of power and the fluid will pass from the buccal opening through the natural opening into the nasal fossa and escape upon the face. How long shall we keep up irrigation? We should keep it up, at each treatment, until the fluids escaping from the nose are normal in color, not different from the agent or agents you are injecting.

We do not always find the antrum where we expect it to be. To the beginner it is an unpleasant thing to find out that he is not in the antrum at all, after he has performed his first operation. Antra vary in size and location, so that it may be difficult for a beginner to find the antrum.

DR. TRUMAN W. BROPHY of Chicago:

I desire to congratulate the society on having this excellent paper, and I am glad to have had the privilege of listening to it. I agree with it, as Dr. Atkinson used to say, in every particular in which I do not now disagree. (Laughter.)

In the first place, we have not time to discuss the question of tumors of the antrum. But I do want to say that we must divide the suppurations of the antrum into two different classes. First, the acute form; and, second, the chronic form. The acute or catarrhal is a simple form of antral disease, and not infrequently we are able to effect a permanent cure by only one injection, and that may be accomplished by making a small opening into the anterior wall of the antrum in the direction Dr. Gilmer pointed out by means of the model, and injecting into it only sterile water, boric solution, or something that will free the antrum from secreted mucus, which will pass out through the natural aperture, and will often relieve it without further treatment. In such cases I would not regard it necessary to make a large opening. But in the chronic cases we have a different condition to deal with. So certain am I in the chronic cases that we have the development of polypi, I am ready to assert that in all cases of three months or longer duration of antral disease, with suppuration, we have polypi developed there.

As to the method of procedure in opening the antrum, I would make a larger opening than is necessary to admit the little finger.

It should be large enough to admit the thumb or larger, so that we may absolutely control the conditions that may confront us, illuminate the cavity, and see what is going on. It is not within the power of any living man to treat disease of the antrum through a little tube which enables him to get drainage, but which does not enable him to see what the condition is within the cavity. It is a mistake to treat a chronic inflammation of the antrum by making a little opening through a tooth socket, or elsewhere for drainage, so small that he can not tell what is going on within. The case, therefore, goes on indefinitely, month after month, and year after year, with, or possibly without, suppuration. The patient does **not** get well, and the reason for this is that polypi are present which must be removed.

The next feature is the matter of complication of antral disease with disease of the accessory sinuses. It must not be understood that we are always able to open the antrum and remove the diseased condition of the lining membrane and effect a cure. I have a case under treatment now which I supposed was cured, but in which I have maintained a large opening. I am able to illuminate the cavity and see every surface of it; but there is dribbling of pus from the superior internal surface of the cavity, and we have in that case a complication of suppuration of the frontal sinus, which I am going to operate upon as soon as I get home. We have associated in some cases suppuration of the ethmoid cells and the involvement of other sinuses; consequently, when we have succeeded in making a large opening and restoring the mucous membrane to a normal condition, sometimes we do not effect a cure. The antral disease may be cured, but that is not all.

The retention or preservation of the opening by the use of gauze is very unsatisfactory to me. I have never been able to preserve a large opening by the use of gauze alone and be sure of it until I have finished what I have to do inside. I have used in its place large plugs of base-plate gutta percha, as big as my thumb, making it in a form to fit the opening, and cutting out the center so as to make a large tube. These tubes are three-fourths of an inch in diameter, or larger. More recently I have made a tube of silver; but have not used it long enough to say much about it. I am satis-

fied, however, that it will work all right. The tube is large enough to maintain the opening, so that we can introduce an electric lamp to illuminate the cavity, and make local applications whenever and wherever required. The application I have used more recently, after removing the growths that are present, is the nitrate of silver preparation known as argyrol. It is a little better than any of the other nitrate of silver preparations.

This tube made of silver is a simple thing, and it should be inserted immediately after the cavity is opened, and before the patient has recovered from the anesthetic. The tube is made of sufficient size to suit the case, with a flange on the outside of it, so that it will not irritate the parts. The inside of the tube is split, and when it is put in the soft silver is bent to hold it inside so that it can not come out. A cap is made to cover the end of the tube to prevent the ingress of food or other material which would cause irritation. It acts as a stopper, the same as you would put in a stovepipe hole in a chimney. The cap or stopper is put in place, and can be removed by the patient and the cavity frequently irrigated.

One of the most important steps in treating antral disease is the frequent irrigation with non-irritating fluids, and if that irrigation can be carried on five or six times a day so much the better. Here is one of the chief objections to the preservation of the opening by means of gauze: If you do not remove the gauze until the next day (and usually you can not treat a patient more than once a day) you have a string of gauze that is saturated with pus, which becomes an irritant to the parts and prevents the formation of granulations, and this in turn retards the process of repair. Therefore a tube made and inserted in the manner I have mentioned serves our purpose admirably. Through this tubal opening you can apply your medicaments. The patient can, two or three times a day if necessary, irrigate with a warm boric solution, which removes the acrid secretions and enables nature to bring about the process of repair.

DR. ARTHUR D. BLACK, of Chicago:

As the case of aneurism of the antrum reported in the paper is so rare, I wish to add my testimony in connection with it, as I

was present at the operation performed by Dr. Gilmer. Immediately the antrum was opened there was a spurt of arterial blood. In regard to Dr. Pruyn's remark as to the precaution of using an aspirating needle in such a case, I would feel much safer to have some long strips of gauze ready to pack into such an antrum in case one should happen to have a profuse hemorrhage. An aspirating needle, I believe, would not have been sufficient to have made an accurate diagnosis in such a case, because one would have gotten a little blood which would deceive him, or a spurt of blood which would be difficult to control. One wants in such a case a large opening, through which to pack the antrum, and control hemorrhage.

I wish to refer briefly to dentigerous cysts in this region and to the embryology. Most of you know that the teeth in their early formation occupy the position of the antrum. That is to say, a child in the first few years of its life has no antrum. The base of the antrum is occupied by the germs of the permanent teeth, and as they are formed and come into position invagination of the antrum from the nose takes place. It is easy to have a cyst formed in the antrum.

In regard to the diagnosis, a case I had recently calls to my attention one point. I was called to operate on an antrum case of several months standing in which there was an opening through the socket of the second molar, which had been extracted, but did not heal. In examining the case carefully I found no pus in the antrum but there was a carious condition of the bone surrounding the socket of that tooth, and all that was necessary was to remove the diseased bone of the palate and allow healing to occur. There was no primary disease of the antrum.

In regard to the different routes of opening into the antrum, it seems to me that through the socket of a tooth should be discarded, even though the tooth has been extracted, for the reason that we have three-quarters of an inch to an inch of bone to go through to get into the antrum. When we cut out enough bone to make an opening large enough to admit the little finger, it requires a great deal of cutting. By going higher up we can get into it more easily. I do not favor the operation suggested by Dr. Pruyn of opening through the nose and through the buccal wall of the antrum, known

as the Caldwell-Luc operation, as I can not see the necessity for double drainage. If you have a large opening in the buccal wall you can irrigate all parts of the antrum.

In regard to the use of gutta percha plugs or tubes introduced into the buccal wall opening as compared with packing with gauze, I have been taught through Dr. Gilmer that we need in the antrum a tight packing of gauze for many weeks after the operation, rather than leave an opening for the granulations to form rapidly. If you do not pack the antrum you have granulation tissue springing up more rapidly than you wish.

In regard to the use of iodoform gauze, that question will never be settled. It has its place where it is indicated. It can be used where the opening involves a large mucous surface, so that the gauze can be packed inside the cavity. If I were going to use iodoform gauze it would not be on an open wound where the odor of it would pervade the atmosphere of the neighborhood. Where the opening is through a mucous surface it is an ideal place to use it, because there is no odor in the room, and most patients, after a day or two, will not complain of its odor.

DR. HUNTINGTON, of Moline (by invitation):

There are only one or two little points I wish to mention. In making a diagnosis of antral disease I have used what is known as the Mikulicz trocar right underneath the lower turbinate, passing it through the partition, and by injecting air or some solution have confirmed the diagnosis by the aid of the transillumination lamp. This is really your clincher in making the diagnosis. I rely very generally upon my transillumination lamp, and can frequently determine the presence of a very small amount of secretion, not purulent, but mucoid, sometimes muco-purulent, just a stringy secretion, then by passing through this small trocar I confirm the diagnosis. In such cases as that cleansing and disinfection of the antral cavity will frequently bring about a cure without operation; that is, the case not needing anything further than irrigation through the trocar. Irrigation of the antrum through the natural opening is certainly a very difficult procedure, which I think can be very seldom carried out. There are some who claim to cure patients by irrigation in that manner but I think such cures are seldom effected.

The choice of operation depends largely upon the case. Sometimes I open through the inner wall of the antrum in cases in which simple irrigation does not do the work, and I effect cures in that way. Sometimes a patient will consent to an operation of that kind under cocaine, who would not stand for an operation through the canine fossa. But undoubtedly the operation through the canine fossa is the ideal one and most certain in its results.

DR. BROPHY:

I would like to ask Dr. Huntington if he could not equally well introduce the trocar through the canine fossa to establish a small opening for the irrigation, or is the other opening preferable in his judgment?

DR. HUNTINGTON:

I presume it can be done just as well. The ease with which the trocar can be passed is much greater through the inner wall of the antrum, because the bone is fairly thin, if you strike it right. Sometimes a person will miss it; he will get into thick bone, but with a little practice he will be able to strike it right. The point at which this trocar is introduced is pretty well up under the lower turbinate, and about half an inch from the anterior. You can pass the trocar very easily. I have never passed the trocar through the canine fossa, because I have always found this way so satisfactory.

DR. C. R. TAYLOR, of Streator:

Fortunately the experience I have had in the treatment of these cases has been satisfactory. The principal thing has been drainage with me. I had one case in which the third molar was involved, and after extracting it and thoroughly irrigating the parts with weak solutions of chloride of sodium a few times the patient was cured.

I want to emphasize one remark made by Dr. Gilmer, and that is the necessity of dentists knowing more about the nose and the conditions we have to meet and treat, and the advisability of working up to the point where our dental colleges should educate students along the line he has suggested. We ought to have a broader and more comprehensive knowledge of the conditions involved about the face, the eye, and the nose. I believe we ought to be instructed

more thoroughly about all the tissues of the face, the nose, the throat, etc., than we are as dentists generally.

DR. HERMAN PRINZ, of St. Louis, Mo. (by invitation) :

Unfortunately I did not hear all of the paper. The essayist mentioned a point in regard to the diagnosis to which I desire to call attention and that is, the so-called Herring's sign, pressing the finger over the antrum that has been filled with pus and eliciting a creaking or crackling sound. Most of the anterior plate, or that part of it which covers the canine fossa, is the thinnest, and therefore is the portion which easily bulges out. If the antrum is filled with suppurative masses, by placing the finger over it one is able to elicit a peculiar sound resembling somewhat that of crumpling of parchment paper. This is one of the most important points next to transillumination.

In regard to the use of an electric lamp, I add to the lamp a small piece of glass rod, bent at an acute angle, placed over the lamp, held by a tube fastened with cement or sticking plaster. The rays of light are transmitted along the axis of the glass rod, not sideways. By so constructing the lamp we are able to enter the antrum and keep the lamp in there for minutes or half an hour, if need be, without generating heat. This device helps in outlining the condition of the antrum itself.

The opening into the antrum should be made preferably through the canine fossa, for the reason we have here the thinnest portion of the bone, although the operation of Cooper of cutting through the socket of a tooth, as subsequently modified, is often indicated, because in a case where the antrum has been opened by extracting a tooth or removing a single root, pushing up into the antrum, you can easily enlarge the opening so as to permit of inspection by the lamp and finger.

Dr. Brophy mentioned the use of argyrol. I have used it in a number of cases up to 50 or 75 per cent solution; but I have fallen back on nitrate of silver in preference.

As to the use of iodoform, this problem will never be settled; but it remains as a clinical fact that the use of iodoform in contact with any mucous membrane, where there is a suppurative process, will check the discharge. Iodoform, when brought in contact with

pus, will liberate free iodine, will check the formation of pus, and the suggestion that it prevents proliferation of new cell tissue is wrong.

DR. GILMER (closing the discussion):

I am under obligation to those who have discussed my paper, especially the younger men.

I have frequently heard the same criticisms of iodoform that have been made today. Always some other agent is recommended which has no odor or is less unpleasant in taste. I have tried all of them and no one has the merit that iodoform possesses. None of them will remain sweet for twenty-four hours if packed into the antrum.

As to packing the antrum, I feel it needs to be packed, as Dr. Arthur D. Black has said, to repress in some instances the too active formation of granulations which, under irritation, will spring up rapidly, and before they become cicatrized we have a great mass of granulation tissue that has again to be curetted away. If we keep the cavity thoroughly packed, which we can do by the means I have indicated, we do not repress granulation so much as to prevent the formation of normal and healthy tissue.

Dr. Pruyn spoke of using an aspirating needle in order to guard against opening into an aneurism in the antrum. If the doctor uses an ordinary hypodermic needle for this purpose he probably will break the needle before he gets through the wall of the antrum, although the wall is thin. If he uses the ordinary aspirating needle for the purpose, it being so large is liable to cause a hemorrhage. I prefer to take my chances by the ordinary method and arrest the hemorrhage by packing.

Dr. Logan says that if the antrum is packed with gauze it will fall out. I have had no such experience; it will not fall out if it is packed in tight. Its end may come out a little, but not enough to annoy the patient.

Dr. Brophy said he would not make a large opening when irrigation or drainage only was necessary. I stated in my paper that I would not make a large opening except for doing a radical operation. In such cases I use gauze to maintain the opening.

Regarding the tube spoken of by Dr. Brophy, I am afraid he

is doomed to disappointment. I constructed a similar tube some years ago when I made smaller openings. I made it of platinum instead of silver, though silver is better. I also made a pair of forceps by which I was able to form eyelets by bending over the outside and inside edges of the tube. This tube, like all others, irritated and caused trouble. I abandoned it. I hope he will succeed better than I.

Dr. Huntington spoke of an additional aid to diagnosis by forcing air into antrum through the inferior meatus. This is a good thought, and I am obliged to him for it.

As to the choice of place for the opening, dentists are inclined to make it through the buccal wall; while the rhinologist prefers to work through the nose.

Dr. Prinz spoke of a crackling sound on pressure on the buccal wall as another diagnostic aid of value. That is true in very rare cases, but the crackling sound is not elicited until the bone is nearly all gone.

DISCUSSION OF REPORT OF COMMITTEE ON REORGANIZATION.

DR. C. R. TAYLOR, of Streator:

There was emphasized yesterday the fact that the great work that is to be done in the future is that of the local societies. I want to say that when we had our second meeting in La Salle County we organized three local fellowship clubs. If you will all work along these lines we will soon have a condition of things we ought to have had years ago, but it is not too late yet. Let a good fellowship club come into every locality in this state, and we will progress in every direction.

DR. E. M. ROBBINS, of Carthage:

I heartily concur in what Dr. Taylor has said, and I do hope that every individual member of each society in this state will consider himself a committee of one to approach such men as he knows to be eligible for membership to the state society, and urge on them the importance of coming into the fold. While the work so far has been grandly done, there are a great many in the state who are still outside, and personal contact will almost invariably lead such of those who have the best interests of the profession at heart to become members of our society.

THE AMERICAN DENTAL SOCIETY OF EUROPE.
GENEVA, SWITZERLAND, APRIL, 1905.

DISCUSSION ON DR. PATTERSON'S PAPER "PORCELAIN CROWN AND BRIDGE
WORK FROM PRACTICAL EXPERIENCE."

DR. W. MITCHELL

Said the first thing that had been considered for a number of years past was the artistic side of dental work, and after that the efficient side of it. No one now, he believed, criticised the art of porcelain work when manipulated by a skilled workman, and Dr. Patterson's work was evidence of what could be done in the line of bridge work. A great deal of crown work had been presented to the Society from time to time, and in carrying the principles a little further and producing bridge work, Dr. Patterson had shown examples of how well and how artistically it could be done. There could be no doubt about its efficiency; it approached the natural condition of the mouth much nearer than any other means, and it did away with the wretched glitter of the gold and also the destruction that very often occurred with some gold bridges. With regard to the crowns Dr. Patterson had shown, the only thing he would criticise in connection with them was the use of the band. His own experience for a number of years, ten years at least, and probably thirteen or fourteen, had been that it was possible to obtain practically the same results without the band as far as strength was concerned. There might be some exceptional cases where it was necessary to use the entire band, or a partial band, but he did not use it except in the case of molar teeth. It was possible to do away with the joint at the gum margin by doing away with the band and yet secure the same strength. It was more dependent on the adaptation of the pin to the root. With reference to the beautiful work that could be done in crown and bridge work with porcelain both high and low fusing, he thought that went without saying. He quite agreed with Dr. Patterson in regard to not utilizing porcelain for bridges of more than four teeth. Where used for a longer span it was necessary to introduce so much iridized platinum that the expansion of the metal inside the porcelain had a tendency to weaken the structure and cause the porcelain to break away from its foun-

dation. He had used low fusing and high fusing porcelain, and he could not say he noticed very much difference between the general utility of the two methods. The low fusing was possibly a little easier to use, but it was a little more difficult to control in places where it was necessary to build it up to any great height. From the mechanical standpoint these specimens left nothing to be desired, and from the artistic standpoint it spoke for itself. With regard to the benefit to the patient, there was the comparative ease of repair in the case of breakage. When set with gutta percha bridges made of porcelain were as easily repaired as a gold crown. In conclusion, he thought Dr. Patterson had given an exposition of artistic ability and utility that was very difficult to surpass.

DR. C. J. MONK (Wiesbaden)

Considered that the specimens passed round deserved the highest commendation as being most esthetic and artistic. He thought it might be open to a little criticism with regard to the saddle portion; he had used a great many saddles and only had one remark to make with regard to them, and that was that it was a mistake to have so many curves. The platinum saddle should not be contoured out to the shape of the teeth; it should be carried in one straight line to present as little edge as possible for fear of the gum becoming inflamed, as it would do if any particles of food remained. The saddle bridge both for gold tube teeth or all porcelain in his practice had been useful where there was a good strong substantial bite and no fear of lengthening of the teeth; in such cases it had been a most highly satisfactory method of putting in bridge work.

DR. W. MITCHELL

Said that was one point he wished to speak about. He had tried contouring the saddles and using them straight, and he had had the best results from the straight ones, and he believed his patients were very comfortable.

DR. L. J. MITCHELL

Said in connection with the models Dr. Patterson had shown, it was evident he had taken into consideration a point brought up at the last meeting, the fact that a great many of the failures in bridges were the result of defective structure, caused by inadequate distribution of the metal that supported the artistic portion of the bridge. There had been up to the present, unfortunately, a very great lack of

understanding of the truss principles in building such bridges, and there had not been the proper supports between the abutments to stand the strain. In metal bridges there was a certain amount of give, but with porcelain the bridges had to be made absolutely rigid, and unless the principle, as exemplified, was carried out in the way of a truss girder there would be many failures, and the thing would be condemned through no fault of the porcelain.

DR. W. A. SPRING

Had only a word of praise to say with regard to the method. The work coincided with work he did himself and it was a great pleasure to him to see it. There was one thing which was a little different from his own work. He noticed that the arrangement for attachment of the porcelain was more complicated in a crown; there was a great deal of metal and a great many little pieces attached. He had found that in his practice unnecessary. One or two pins in molars, or dowels sticking through the cap, had been quite sufficient in his practice to which to attach the porcelain. In bridges it was necessary to pay special attention to having the attachments exceedingly strong, but his work was all soldered with pure gold, and for the bar running from one cap to the other he used gold strengthened by 20 per cent of iridium.

DR. T. G. PATTERSON,

In reply, thanked the members for their kind consideration of his paper. In reply to Dr. Mitchell he observed that he had always had much better success where bands had been employed, and had failure after failure when bands were not employed on account of the splitting of the root. Great credit was due to Dr. Parmley Brown, who after an experience of twenty years said that no good porcelain work could be made without a band, and Dr. Peeso, who was the best crown and bridge worker living, invariably used a band. Dr. Goslee was also a band user. With reference to Dr. Monk's remarks, he had seen bridges constructed, and had constructed them himself unfestooned for each tooth, and thought there was more chance of food getting under than in a bridge curved for each tooth individually. He had seen bridges in Dr. Griswold's office and could shown some in his own practice where he would defy anyone to get a piece of floss silk or explorer under without causing pain to the patient. He wished to ask Dr. Spring his object in using gold for solder as the

greatest percentage of his failures had been caused by the high fusing porcelain dissipating the solder.

DR. MONK

Said he was sorry he had made himself so badly understood. He had no intention of supposing for one moment that there could be any space between the platinum and the gum. The only question was that when they were festooned, there was a longer line of edge between the gum and the platinum, which made that edge less easily cleansed. It was not a question of fitting the platinum on the gum. A festooned edge of platinum had a longer surface drawn out in a straight line than a straight edge, and consequently there was more secretion liable to lodge beneath it.

DR. SPRING

Said that on looking at the beautiful specimen with a saddle he found that the gold or combination solder that had been used showed a bright golden color. When he used a pure gold solder he kept the blow pipe on it until the gold had disappeared. In the first place the metals must be in absolute opposition; the gold was drawn in between the metals and became combined with them until it became really a platinum solder. He burnt the appearance of gold absolutely out. In his own work he should fear that the piece of work exhibited would not be sufficiently strong at the point where the saddle joined the band. He always ran his bar directly across that joint. In addition to soldering the point of attachment between the saddle and band, he added a piece of platinum on each side, very soft platinum, which conformed to the three parts, saddle, band and bar. He then soldered again with pure gold until the gold color disappeared, and it was practically a platinum solder. There could be no banding at that point. In the specimen shown there was only one point of attachment.

DISCUSSION OF DR. WEBSTER'S PAPER "A NEW IDEA IN THE REPAIR OF
BRIDGE WORK."

DR. H. J. MOORE

Said it was very difficult to discuss such a paper, which seemed to him only to be open to praise. Such small mechanical points were most interesting to dentists and assisted very much in practice, and anything which saved time they could be only thankful for. It was known that if a bridge was set with gutta percha it could be taken

off and soldered again, but very often it was difficult to do that if it was a very large bridge, and such a method as that described would save half the time in doing repairs. The thing that impressed him was the cutting off of the old backing. Very often in repairing a bridge there was a backing which was bent, and it was necessary to bend it back into shape, and it was not strong at the top. By cutting that off there was a fresh surface of gold to bite against, and it was as strong as the original biting surface. It seemed to him an improvement on the Bryan plan, and when the next repair came along he thought all the members would be glad they had heard the paper.

DR. W. MITCHELL

Said small details that were found so useful in everyday work were things that made the meetings of the Society worth coming to. As an adjunct to repairing bridge work or facings which were broken off, he had a suggestion that might be worked in connection with the one of Dr. Webster's, a plan that he had used for a number of years past. If a facing was broken off, and the backing was very thick, and there were some places where it would be impossible to use the method described—and the pins would not reach through and it was difficult to know what to do—his method was to cut the pins off if they remained, drill through the backing, whatever depth it might be, let down the tooth, and then make a fine platinum tube to go over each pin. By taking a piece of piano wire, the thickness of the pin, and taking a small strip of skin platinum and rolling it between the fingers over the wire, and withdrawing the wire, one made a tube. Then he put a little chloride of zinc on the pins and slipped the tube over the pins and united the two with a small amount of soft solder. Then he pushed the pin and tube combined through the backing. He countersunk the hole, usually with a rose head bur, and then cut the elongated pins off with a fine saw, and holding the tooth against the backing with one hand took a round burnisher and pressed it into the tube, which spread open. He then filled the countersunk tube with a quick setting amalgam. That was an efficient and rapid means of repair, and was a little detail he had often found useful.

DR. WILLIAM M. COOPER (Frankfort)

Described by means of diagrams a method he had found very successful in making such repairs. In removing the broken porcelain he cut off the pins and polished the old backing with a small corundum

wheel. He then selected a tooth of the proper shape and size and took a piece of German silver or brass, the thickness of ordinary backing, and punched holes to fit the pins on the new facings. The holes had to be very accurate and fit closely. Then that plate might be trimmed and used as a guide for the position of the new pins in the old backing and could be trimmed to fit into the shaped place on the old backing to give the proper relation of the pins to the bridge. He used that backing as a guide for starting the holes for the insertion of the pins in the new facing. Before they were drilled deep he took an impression in sealing wax, and that might be sent to the laboratory and poured up in spence metal, giving the laboratory man an accurate model of the point on the bridge to be replaced by the new facing. He might drill his holes in spence metal to fit the pins of the new facing, and while grinding up superficially in the laboratory the operator could go on drilling his holes and making the counter sinks. A very little grinding was required at the chair. With a small ribbon saw the pins on the facing were split, and with an instrument made from an old plate punch from which the original punch had been taken out and a long taper point inserted, a little quick setting cement was placed at the back of the new facing, the facing inserted in position, the point of the punch inserted between the split in the pins, and the thing pressed home. The holes then remaining on the back of the old backing could be filled with a quick setting amalgam. Such cases had been most successful and he had never had a breakage.

DR. L. J. MITCHELL

Said that what he had seen only demonstrated more than ever the necessity of setting with gutta percha so that the things could be easily removed. It was a matter he had advocated for years, he himself having advocated it in Basel in 1892, and he had been following it ever since. The only reason why the other methods were necessary was because so many people would make crowns and not take the precaution to see that the pins fitted the roots, and the crowns came off the gutta percha because the crowns and pins did not fit. Gutta percha would hold crowns perfectly, and in his fourteen or fifteen years of experience he had found no difficulty. What was worse than having porcelain faces broken off was to have pins broken off in the roots, but when gutta percha was used superstructures were easily removed and repaired.

DR. ACHARD

Said he should like to offer another suggestion made to him by Dr. Wayne for preparing bridges for facings that had been broken off. When a facing had been broken off the pins always remained. He cleared off the remaining porcelain, fitted a facing, drilling two holes corresponding to the remaining pins in the old bridge with a diamond drill, and then set with cement. Dr. Wayne had told him they lasted for years when prepared in that way.

DR. WAYNE

Said he drilled one large hole and undercut it.

DISCUSSION OF DR. JENKINS' PAPER "THE PRESENT CONDITION OF PORCELAIN IN DENTISTRY."

DR. MONK

In opening the discussion, said there was little adverse criticism to be offered, but a good deal of praise. Dr. Jenkins noticed the latest competitor, the so-called porcelain cement, which in his opinion could never supersede or even compete with porcelain. Porcelain cement would have its adherents chiefly amongst those dentists who from laziness or want of skill praised a material which enabled them to collect fees with a minimum amount of trouble to themselves or their patients. Such dentists fortunately were not to be found among the members of this Society. Everyone agreed that porcelain work was undoubtedly the ideal prosthesis, and Dr. Jenkins enthusiasm for the work could be appreciated. With regard to the possibility of finally doing away with the gold bridge in favor of the porcelain one, he doubted very much whether under all circumstances, especially in cases of short bite, this would ever be possible. In the majority of bridge work cases it might be possible to use porcelain, but to say that the gold bridge might be absolutely superseded was, in his opinion, going too far. He had not been entirely convinced of the wisdom of the pin and cap crown as advocated by Dr. Jenkins over a banded, so-called Richmond crown. With one of the members who had spoken that morning he thought that the time for discarding the banded crown had not come yet. He had tried the pin and cap crowns advocated by Dr. Jenkins, and no doubt they were satisfactory in every respect, but he had his doubts as to whether they were going to be quite as strong and

offer all the support that the root required under the stress of mastication.

DR. W. MITCHELL

Heartily endorsed all Dr. Jenkins had said with regard to a pin supplemented by a cap. He did not think on any single rooted tooth in the last twelve or fifteen years he had used half a dozen bands, and he had not found the necessity of doing so. The band in the majority of cases was practically no support; in the first place it was almost impossible to get a perfectly fitting band except by the Buttner method. No matter how much care was bestowed on the preparation of the root, it was almost impossible to get a perfectly adapted band, one that would not afford a place for the retention of food or be a source of irritation to the tissues surrounding the root. Taking a band of the nature of a ferule, sufficiently deep to afford support, the dental ligament would be cut, and if the band was short it was not needed at all. If the dental ligament was cut there would be elongation of the root and exposure of the band eventually. The bandless method had no such objection. There was no question at all that if the pins fitted the root perfectly all the strength necessary would be obtained, and unless there was a wobble there would be no breakage. Pins could be made of much larger dimensions than the average person believed.

DR. W. J. YOUNGER

Said one objection he had to the band was that it produced irritation to the gum that was very frequently the cause of pyorrhea alveolaris.

DR. J. W. GALE

Said that with regard to bands, when one of the front teeth was properly cut off a band could be so placed that it would scarcely show, and it *could be* covered entirely. He would submit cases to the Society where he had put teeth on with a band and one could not see the slightest particle of gold, and those teeth had been on from five to ten years without the slightest irritation of the gum tissue. He thought with a band properly fitted on a root properly cut off the pin was a danger instead of a help. His long experience in bridge work had led him to the conclusion that the splitting of the root was the most serious thing that could possibly happen to a bridge, and if it was put on with a band it took but a few minutes to reset it should it come loose. He illustrated his method by means of diagrams, and said he believed a

great deal in contour in preserving the ligament of the root. With his method he guaranteed that it was impossible to break the tooth if the band was properly fitted.

DR. W. F. KELSEY

Desired to hear something of the advantages of the band in preventing the splitting of the tooth.

DR. W. D. MILLER

Thought it was unnecessary for him to say anything in favor of the beautiful work which Dr. Jenkins had done. The dental profession owed him very much for his work in that direction. There was, however, one little point on which he would like to take issue. Dr. Jenkins seemed to be of opinion that it would not be advantageous to the dental profession if they were able to discover a cement which would be as perfect in its properties as porcelain and would be much more easy in its adaptation. He was of opinion that it would be a great blessing to the dental profession and, especially to the patients, to the community at large, to a great majority of whom porcelain fillings at present were not accessible. It was only the better class of patients who could afford the fees dentists were obliged to charge for porcelain. If it were possible to provide a cement of any kind which could be easily inserted, which could have the polish, the transparency and durability which porcelain had, he thought all dentists would hail it with great delight, and he did not believe that the skill of the profession would suffer by it. There were many things that taxed the skill and ingenuity of the dentist to the greatest extent. The exposure of a pulp, the cleaning out of a tortuous root canal, the making of a perfect gold or amalgam filling, repairing broken facings, making up crown and bridge work, and all those sort of things, taxed the skill of the dentist to the full, and there would be plenty of that sort of work to be performed even if a perfect cement in the shape of a filling were found. He did not think endeavors in that direction were to be discouraged by authorities of so high a standing as Dr. Jenkins and Dr. Monk. The attempts at present were very crude and the results very diversified. Sometimes good results were obtained from Ash's porcelain, and other firms had introduced porcelain of a similar kind. They were all crude attempts, but if by any possibility those attempts in the course of time should bring about something more perfect the profession would be grateful for it.

DR. W. MITCHELL

Heartily endorsed what Dr. Jenkins had said with regard to the cement question. Just in proportion as the work was reduced so that the man in the street could take it up so the profession sank to a very low level. There was always a tendency for people to shelter themselves, even the most skilful and conscientious operators. With an easy filling material the man in the street would be mummifying pulps and producing results that were disastrous to the teeth and derogatory to our profession. He did not believe in a simple way of doing things, and the profession had to attain to a leveling up rather than to a leveling down. While he believed in having things as simple as possible, when a reasonable point was reached, there was a danger in going further. He was quite with Dr. Jenkins in regard to the advisability of insisting on the most extreme thoroughness in all operations. Any departure would lead to a slovenly method of work.

DR. W. D. MILLER

Did not think there was any danger of that kind at all. The profession had been using cement and amalgam for a long time and some of the most skilful men made use of amalgam, and the skill and standing of the profession certainly had not been lowered in any way. Neither had the standard of the dental operator in general been lowered by the use of rubber in making plates, or by any other simplifications. If it were true that simplicity lowered the standard there would be no attempt to simplify operations at all—they should be made as difficult as possible, and finally they would not become accessible to anybody except those who had a purse long enough to pay for the operation. Simplicity need not be slovenliness. If it was possible to find anything by which a pulp could be mummified and left without putrifying it would be a good thing, and efforts in that direction would be laudable and just. Anything of that kind would save millions of teeth which now had to be sacrificed. Of course it was necessary to attain to as high a skill as possible, but that skill could be manifested in the use of cement as well as in the use of porcelain.

DR. PAUL GUYE

Thought that porcelain cement fillings had their place for temporary work only, and desired to sound a note of warning with regard to

one of them. One of his confreres had thought of having Ash's cement analyzed, and it was found to contain a large proportion of arsenic. Analyses had been made of several others, but they had not been found to contain arsenic. He thought that warning was very necessary in order that people might be cautious in that respect.

DR. A. WETZELL

Said Dr. Jenkins had observed that Ash's cement had very slight adhesion, and his own experience had proved that it had no adhesion at all. On the contrary, it contracted a great deal. He had a letter from his brother lately in which he told him he had had a great deal of success from lining the cavities with Harvard cement and then putting in porcelain cement. He had had glass tubes filled with Ash's cement, and when left for a few weeks the filling fell out without any pressure, showing that it had contracted. Of course, the result in the mouth might be different, as Ash's cement was very hygroscopic.

DR. MONK

Hesitated to refer to the question between Professor Miller and Dr. Mitchell, but he thought Professor Miller was somewhat badly advised in bringing the comparison of rubber into the question. If one thing had spoilt the mechanical dentist and reduced the standard of mechanical dentistry it had been the introduction of rubber.

DR. MILLER

Asked what poor people would have done who had had the blessing of artificial teeth but for rubber? He did not want to stand up as an advocate for cements; he did not use them himself, or only in a very limited degree; but he cautioned anyone against using any new thing until it was thoroughly tried. He was only favoring the perfect cement. If ever a perfect cement was found no dentist was doing his duty to his patients who did not use it.

DR. MONK

Thought Professor Miller, Dr. Mitchell and himself had now squared the circle. He did not think for one moment that it would have been possible to do without rubber—that was not the point at all; but he did say that it had spoilt the mechanical dentist. Rubber had filled a space nothing else could have filled, but it had brought

about a state of things in which it was most difficult to get a perfect gold workman, whereas in former times they were the rule and not the exception.

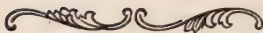
DR. MILLER

Believed that mechanical dentistry was on a much higher footing today than when gold was used and rubber first introduced. Mechanical dentistry and crown and bridge work had advanced wonderfully since that time, in spite of the introduction of rubber. Rubber had not kept down skill at all.

DR. JENKINS

Said the discussion brought to his mind something which was a tradition in his family. In the early settlement of Massachusetts his people bought the land of the Indians, and being of the strictest sect of Puritans they did their best to convert the Indians. One chief in particular was at last brought up for examination to enter the church and he was asked to repeat his Catechism. They came to the question, "What is original sin?" He reflected for a moment and then replied "Laziness." That was in his mind with regard to the introduction of a material so plausible as the one to which he had referred. To his certain knowledge it had been the means of bringing corruption to some of his colleagues, who knew what original sin meant. He quite agreed with Professor Miller that should such a perfect cement ever be found it would be no disadvantage but a blessing. He was, however, very sceptical as to whether, in the present generation at least, it would be discovered, and in the meantime it was necessary to guard against being led astray by a specious and plausible and not altogether practicable material. He desired to refer to some of the remarks which had been made both in the discussion that morning and in the discussion that afternoon upon crown and bridge work. It was a very mortifying and distressing thing to have a crown or a bridge break in any particular. Why did a root split when it had an artificial crown attached to it? It always split because the operator had not done his duty, and for no other reason. As he stated in his paper, if one intelligently used the proper alloy of platinum he could make a crown or bridge which was absolutely unbreakable. It could be done and it should be done. A crown almost always broke in one place, where

the pin entered the canal, and it broke because the pin bent. If the pin was absolutely rigid it did not bend or break. It could be made absolutely rigid by simply counter sinking the root. Sometimes Nature had already done it by the devastating process of decay and the cap which covered the root had to be carried to a very considerable depth, but if Nature had not done that it was the duty of the dentist to do it in a measure, to carry that platinum and iridium cap to a perfect fit over the crown, then pierce it with an unbendable and unbreakable pivot, and solder the cap to it. Then no matter how great the stress of the natural bite, it had a foundation which was immovable. Reference had been made that morning to the size of bridges, and members were remarking that in their opinion four teeth were as many as could be safely put upon a porcelain bridge. He was about to return to Dresden to replace a gold bridge of ten teeth with porcelain, and it would have for support two molars and a central incisor, but he pledged his word it would not break. He knew he could make a porcelain bridge that would hold so long as those molars and that root retained their firm attachment to the jaw. It was a simple question of mechanics, of understanding the material and combining the various materials in a scientific and intelligent manner.



W. F. B. McDonald, A. F. Marvin, R. F. Merritt, H. B. Moore, J. W. Needles, A. M. (University of Colorado), C. B. Newcomb, G. S. Patterson, W. L. Rarden, G. C. Richardson, C. C. Robinson, R. L. Sexton, C. F. B. Stowell, E. F. Strom, D. D. S. (Chicago College of Dental Surgery), G. F. Terry, J. D. Terry, E. G. Weeks, G. C. Weideman, I. L. Wheeler, A. E. Wilson. *Doctor of Dental Science*—M. L. Ward, D. D. S.

AMERICAN SOCIETY OF ORTHODONTISTS.

The fourth annual meeting of the American Society of Orthodontists will be held September 28, 29 and 30, 1905, at the Stratford Hotel, corner of Jackson boulevard and Michigan avenue, Chicago, Ill. Papers will be presented by Dr. Lloyd S. Lourie, Dr. Alfred P. Rogers, Dr. Martin Dewey, Dr. Frederick S. McKay, Dr. Herbert A. Pullen, Dr. R. Ottolengui, Dr. Frederick B. Noyes, Mr. Carl Werntz, Dr. Edward H. Angle, Dr. Varney E. Barnes, Dr. Richard Summa, Dr. Walter H. Ellis, Dr. Frank M. Casto, Dr. S. E. Dodson, Dr. Charles A. Hawley, Dr. A. H. Ketcham, Dr. Norman G. Reoch, Dr. William O. Talbot, Dr. William J. Brady. All who are interested in orthodontia are cordially invited to take part in this meeting.

RICHARD SUMMA,
FRANK M. CASTO,
EDWARD H. ANGLE,
Board of Censors.

RECENT PATENTS OF INTEREST TO DENTISTS.

- 792,836.—Dental obtunder, Burt A. Loveless, Fulton, N. Y.
792,618.—Artificial denture, Finis E. Roach, Chicago, Ill.
792,669.—Head-rest attachment, Jacob S. Schaff, Des Plaines, Ill.
793,125.—Physicians' adjustable chair, Victor A. Fagerstrom, Rockford, Ill.
793,233.—Lamp-holding bracket for dental chairs, John J. Ryan, Paris, France.
793,259.—Pocket dentifrice holder, Charles W. Wilson, Toledo, Ohio.
12,365.—Reissue, Dental plugger, Alexander W. Wimmer, Chicago, Ill.
793,999.—Means for securing artificial teeth to dental plates, Leo E. Evslin, Paris, France.
794,006.—Dental drill hand-piece, George R. Gossling, Walton-on-Thames, England.
797,007.—Hand-piece for dental engines, George R. Gossling, Walton-on-Thames, England.
793,681.—Head-rest for dental chairs, Frank Ritter, Rochester, N. Y.
793,682.—Rubber dam holder, John J. Rojo, Mexico, Mexico.
795,084.—Artificial upper denture, Louis L. White, Portland, Ore.
Copies of above patents may be obtained for ten cents each by addressing John A. Saul, solicitor of patents, Fendall building, Washington, D. C.

OFFER OF PRIZES BY THE NEW YORK INSTITUTE OF STOMATOLOGY.

With the desire of stimulating investigation in any field of activity directly relating to Dental or Oral Science, the New York Institute of Stomatology offers two prizes for the best papers submitted to it embodying the results of such original research.

The first prize for the best paper will be a gold medal and \$250. The second prize for the next best paper, a gold medal and \$100.

Conditions.—(a) The papers offered for competition must be typewritten in English. (b) Must contain not less than 1,500 nor more than 3,500 words.

(c) Must be signed by a motto or *nom de plume*. (d) Must be accompanied by a sealed envelope marked with the same motto or *nom de plume* on the outside, containing the true name as well as the motto of the contestant within. (e) Must be sent to the chairman of the executive committee, Dr. F. Milton Smith, 38 West Thirty-sixth street, on or before March 1, 1906.

Judges—The following gentlemen have consented to act as judges: Dr. C. N. Johnson, of Chicago, editor of THE DENTAL REVIEW; Dr. Eugene H. Smith, of Boston, dean of Harvard University Dental School; Dr. Wilbur F. Litch, of Philadelphia, editor of *Dental Brief*, under the following rules:

(1) The papers will be sent to the judges without the sealed envelopes, containing the names of the contestants, which will be retained by the executive committee till the decision of the judges is made. (2) In deciding on the merits of papers offered in competition the judges will be requested to take into consideration the value and character of the research work the results of which are presented, more than the literary character of the essays, but to give the latter due credit. (3) The judges are expressly authorized to decide which if any of the papers submitted to them are of sufficient merit to entitle them to the prizes offered, or to withhold the award from all the papers if none are deemed worthy. (4) Authors of the prize papers will be invited to read their essays before a meeting of the Institute, as will the writers of other papers of especial merit, the Institute reserving the right to the first publication of all papers offered in competition. Papers not used will be promptly returned to the writers. Those read before the Institute will be as fully discussed as possible and when published will be adequately illustrated. For further information address Dr. F. Milton Smith, 38 West Thirty-sixth street, New York, N. Y.



THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: C. N. JOHNSON, M. A., L. D. S., D. D. S.

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EDITORIAL.

THE LEWIS AND CLARK DENTAL CONGRESS.

The congress held at Portland, Ore., July 17, 18, 19, 20, 1905, will mark an era in the advance of the profession along the coast States. In fact its benefits will reach far beyond this. It was in many ways a notable gathering. Dentists attended from as far east as Philadelphia, and when it is stated that nearly, if not quite, 600 registered, it will be seen that, considering distances and taking into account the total number of dentists in the coast States, the attendance was exceedingly creditable.

The middle West sent a goodly number. In fact it was stated that there were more in attendance from Chicago than even from San Francisco.

Beside the feature of numbers there was manifest the greatest enthusiasm, and we believe the event will prove an encouraging impetus to dentistry such as the far West has never before experienced.

The papers were excellent, the program extensive, and the clinics very interesting. One of the most striking things noted was the exhibit of Dr. William Bebb, of Los Angeles. He displayed a collection of crania illustrating comparative dental anatomy, all his own collecting and prepared by himself. The exhibit was wonderful in the variety of specimens and the great perfection with which they have been mounted. We have never before seen so beautiful an array, and we hereby make the prediction that if Dr. Bebb follows this work along the lines he has started it will not be long before he will be the foremost comparative dental anatomist in the pro-

fession. He has named his collection the Geo. H. Cushing Museum, and it is a most worthy tribute to a worthy man.

The profession of Portland showed true western hospitality in their entertainment of visitors to the congress. The officers and committeemen worked unceasingly for the success of the meeting, and they may rest assured in the satisfaction that they achieved a triumph.

PRACTICAL HINTS DEPARTMENT.

EDITED BY G. W. JOHNSON, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, THE DENTAL REVIEW, 55 State street, Chicago, Ill.]

Do not make Rash Promises to your Patients:—Many of the difficulties in dentistry have arisen from the operator's promising too satisfactory results. The public has been erroneously educated to expect too much. The most that we can do is to do our best and leave the rest to that power which regulates those conditions over which we have no control.—*Mark G. McElhinney, Ottawa, Canada.*

Administering Somnoform:—In administering somnoform, as in fact with most anesthetics, the amount of air admitted has a great influence on the duration of the period of excitement. With robust subjects the more rapid and profound the anesthetic the safer the operation will be. With questionable subjects who exhibit distress the only guide must be the judgment arising from the experience of the operator.—*Mark. G. McElhinney, Ottawa, Canada.*

Chart Showing the Fifth Nerve:—Cut out page 575 *Dental Digest* for June, 1905, and tack it upon the wall of your operating room. It contains a chart showing the fifth nerve, its branches, etc., and will materially assist you in explaining to a suffering patient why and how pain may be felt at a point remote from the cause.—*W. H. Reaben, McComb, Miss.*

[NOTE.—We would ask Dr. Reaben to look up THE DENTAL

REVIEW for June, 1904, page 568. The charts reproduced therein are found very satisfactory for the doctor's purpose.—EDITOR.]

Cover for Bracket Table:—I have at last discovered an ideal glass cover for a bracket table. Have a glazier cut a piece of ground glass so that it will fit nicely inside the molding surrounding the top of the table. Cover the top of the table with perfectly white paper—bill-heads with blank sides up will answer admirably—and after cleaning the glass place it upon the paper, ground side up. This will give a pleasing effect, the glass can be cleansed thoroughly and as often as necessary, and will not show scratches made by steel instruments placed upon it. I have used one for several months and find it simply perfect.—*W. H. Reaben, McComb, Miss.*

Gold and Platinum Alloy:—The colleges and text books tell us the proper proportions of gold and platinum alloys but they usually fail to tell us how to do it. In most cases the platinum appears in white spots on the plate without producing a proper alloy. Take a small piece of 22-karat gold and fuse it under the blowpipe. Then work in all the platinum you can in small pieces until it has taken up all that is required. It will produce a small button of a white alloy which is very brittle. Add this alloy in required proportions to the gold in the crucible and it will produce a real platinum alloy. By this method you can make clasp gold that is pretty nearly as stiff as a steel spring and yet will roll and work without fracture.—*Mark G. McElhinney, Ottawa, Canada.*

Ligating Rubber Dam on Two or More Teeth:—Pass the ligature around one of the teeth so that the ends will be opposite each other on the labial and lingual aspect on that side of the tooth farthest from the next tooth to be ligated. Then pass the ends back past the tooth and across them beyond the next tooth. Now bring the lingual end out between the teeth and tie. It will be observed that the ligature entirely encircles each tooth and once tying answers both, and the ligature passing around both teeth makes it much less liable to slip off. This may be carried to any number of teeth, but it is well not to cross the space containing the cavity, as it tends

to draw the teeth together, and the ligature would be cut by finishing strips or disks.—*R. E. Sparks, Kingston, Ont.*

Lining a Cavity with Tin:—Tin has long been proven to be a good tooth preserver, but fillings made of tin foil alone are very soft and if exposed to view become dull and unsightly. By lining a cavity with tin foil and filling with gold we derive the benefit of tin contact and gold density. To obtain this result fold No. 5 tin foil to 4 or 6 thickness, according to the size of the cavity, making the fold a little wider than the diameter of the cavity. Cut off a square and burnish into the cavity as if making a matrix for an inlay. Then insert the gold. If the cavity is in anterior tooth, and shallow owing to the walls being broken down and coming to a fine point toward the cutting edge, cut a strip off the fold a little wider than the depth of the cavity and long enough to extend across the cervical wall and half way down the labial and lingual walls. Burnish this to place leaving the edge protruding a little beyond the margin of the cavity. This gives the tin contact along that part of the walls most liable to recurrence of decay and does not interfere materially with the retention of the gold.—*R. E. Sparks, Kingston, Ont.*

MEMORANDA.

MICHIGAN STATE DENTAL ASSOCIATION.

The Michigan State Dental Association held its forty-ninth annual meeting at Detroit July 10th, 11th and 12th. The meeting was well attended and the clinics were very interesting.

HARVARD DENTAL ALUMNI ASSOCIATION.

The thirty-fourth annual meeting of the Harvard Dental Alumni Association elected the following named officers for the ensuing year on June 26, 1905, at Boston, Mass., viz.: President, Ned A. Stanley, '84, New Bedford, Mass.; vice-president, Arthur W. Eldred, '90, Worcester, Mass.; secretary, Waldo E. Boardman, '86, Boston, Mass.; treasurer, Harold DeW. Cross, '96, Boston, Mass. Executive committee, Waldo E. Boardman, '86, chairman ex-officio, Boston, Mass.; Walter A. Davis, '01, Boston, Mass.; Arthur A. Libby, Boston, Mass.. The officers compose the council.

WALDO E. BOARDMAN, '86, *Secretary.*

UNIVERSITY OF MICHIGAN COLLEGE OF DENTAL SURGERY.

Graduates, Doctor of Dental Surgery—J. O. Adams, L. C. Austin, C. G. Bailey, J. A. Burrill, L. B. Chapin, W. F. Dodsley, LL. B., H. S. Edmonds, R. N. Fisher, R. G. Gordanier, A. C. Hamm, B. H. Honeywell, C. A. Howland, B. J. Howlett, W. G. S. Letterman, B. C. Le Vanseler, R. McCann,

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CHICAGO, SEPTEMBER 15, 1905.

No. 9

SOME QUESTIONS CONCERNING PYORRHEA.*

BY L. L. DAVIS, D. D. S., CHICAGO.

Exception may be taken to the title of this paper, but I have purposely used the term pyorrhea because it is at the present time the most widely known and used of any of that multitude of names applied to that condition of the peridental membrane and alveolus that causes gingivitis, loosening of the teeth in the socket and final loss of the organ of mastication. Even among the laity it is becoming a term of important significance and a statement from the dentist that such a condition prevails with them often materially aids the professional man in his attempt to keep the mouth in proper condition. The first question came to my mind about the last of the year, and arose from the seeming number of cases of pyorrhea presented at that time. Is the disease on the increase? In order to enlighten myself I proceeded to go over my records as far back as the data promised correctness on this subject. My premises can not, of course, be conclusive until a number of dentists have done the same work, yet I think my inferences are just, after careful analysis of the records. These show that during the last five years there has been a steady increase in the number of cases coming under my notice. The numbers are as follows: In 1900 there were thirty-seven recorded cases of pyorrhea; in 1901, fifty-two; in 1902, seventy-eight; in 1903, eighty-four; and 144 in 1904. Going over the list enumerated I find that not all the thirty-seven of 1900 came again in 1901, although several may have presented themselves during the same year two or three times. Neither in any year did all of any previous year, but the year 1904 contains many names

*Read before the Odontological Society of Chicago, February 14, 1905.

that have appeared in former years. The increase, however, seems to be in new cases, and some of them in the person of younger members of families that have been under my charge for a long period. This feature of the records leads to the question—Is the disease hereditary, or does the transmission occur by infection or inoculation? A careful examination of these cases where younger members of families present evidence of the disease show that there were twelve cases covering the period of five years. Of course the greater number of cases may not have children old enough to show the development of the disease. Of these twelve of the second generation cases, two were in one family, five in another and the remaining five scattered. The two cases were daughters of a widow (since deceased) whose mouth when first presented was in very bad condition. During the life of the mother it was necessary to see them frequently in order to keep the disease under control, but since her death, three years ago, I have seen the daughters but twice, and the last time, after the lapse of nearly two years and a half, there were no signs of recurrence of the disease. In the five cases from the same family, the mouths of both parents were in bad condition. The oldest of the children, married, presented almost as bad a condition as that of her father and mother. The remaining four have only one or two of the anterior teeth affected, usually a lower central or both a central and lateral above. The five scattered cases are slight and show only in the anterior teeth. Taking ten of the twelve cases only the anterior teeth were affected, five with the lower centrals, three with upper centrals and laterals, one, both upper and lower centrals and laterals, one, with lower centrals and right upper second bicuspid. The remaining two cases had general trouble with nearly all the teeth.

During the five years nineteen cases are recorded where both husband and wife were treated for like trouble. These cases showed more or less general disturbance, that is, the disease was not limited to one or two anterior teeth, but in some of the severe and older cases, nearly all the teeth were involved. These records would lead to the inference that inoculation or infection plays a more important part than heredity. If this is a true inference, another question arises. How great an influence does systemic medication have upon the disease? With the "heredity" theory and its accompany-

ing diathesis, systemic medication is essential to complete recovery, but do the results of your practice show this? How many patients will continue to take medicines to counteract the effect of diathesis for any length of time? And, will not the greater proportion of them steadily carry out methods of teeth and gum brushing, etc., etc., that you have pointed out to them as necessary aids to your efforts in bringing about complete recovery? Do not the mouths so cared for show better results than if medication alone were practiced?

I am not combating the heredity theory entirely, but I do insist that local prophylaxis produces better results than systemic medication. Therefore, while heredity may be a predisposing factor to the disease, proper care and cleanliness will tend to prevent it. This much should be taught in all families where the disease is present, and at the same time parents should be fully informed of the character of the disease and its communicability.

This causes another question to obtrude itself upon us. To what extent are we obliged to try and retain in position teeth afflicted with pyorrhea? We all know that teeth whose life of usefulness has passed, owing to absorption of the alveolus and consequent loosening, can be retained for a considerable period by the use of ligatures, wires, bands or some other method, but is this always desirable even though retained without discomfort to the patient? There are a number of factors which enter into a case of this kind and each needs careful consideration before reaching a decision. 1. The age and sex of the patient. 2. The physical condition. 3. The possible retention without unsightly appliance. 4. What probability is there that your instruction as to care and cleanliness will be carried out? 5. And finally, what effect will such retention have on the teeth of the rest of the family? The two latter clauses certainly have greater weight with me than any or all of the others in determining as to the retention of teeth, when there is a question as to their period of usefulness. One more interrogation and I am through. Is implantation desirable in cases of young persons who have lost an anterior tooth from this disease? Here again sex will influence the decision other conditions being equal and the health of the patient, above all things, being good. In the male strength is usually more necessary than comeliness, but with the

female this is the first thing to be considered. It is possible to implant and have retained for a number of years a good healthy tooth in the socket of a diseased one if precaution is taken to thoroughly cut away all unhealthy and injurious tissue, but I have yet to meet with a successful replantation of a tooth affected with pyorrhea.

HYPNOTICS AND ANODYNES; THEIR DENTAL APPLICATIONS.*

BY T. L. GRISAMORE, PH. G., D. D. S., CHICAGO.

As the laity become convinced of the fact that our profession is a profession and acknowledge it as such, so should we be able to strengthen that belief along that line by prescribing intelligently medicines for their ailments, when we are called upon to administer to them professionally. I do not know of any one thing which strengthens the individual dentist in the minds of his patients more than, when the case demands, to be able to prescribe and do it in a manner which indicates that he is familiar with the needs of the individual and thoroughly acquainted with the remedies he is using.

He should know pharmacology; he should know the dose, medium, full and toxic, what to expect after the administration of each. If toxic effect comes from the administration of a medium dose, as does occur in many individuals, he should be able to recognize it and administer antidotes, both physiologic and chemical, without delay. To my mind, no man should ever administer any drug without a knowledge of, at least, the greater part there is to know of its physiologic action. Hallis says: "Drug proving is the only true basis of drug using." And should we as dentists follow that motto in all our work, it would not be long before the suggestions of our being a branch of the medical profession would be considered as a huge joke instead of a stern reality.

Another of the important features is to know the condition of the individual to whom the remedy is being administered. I think all will agree with me in this, if you only consider the cases of poisoning wherein some recover while others do not, and this does not include the vast number of drug fiends who never recover

*Read before the Chicago Dental Society.

from the use of what is commonly known and thought of by the laity as harmless headache or neuralgia powders. This is simply an example of administering hypnotics and anodynes without a knowledge of the conditions involved. In administering this class of drugs we should write the prescription or give the remedy with strict directions as to the manner in which it shall be administered, and in my opinion without the individual in most cases knowing the ingredients of the remedy, as by so doing we can reduce to the minimum the liability of the habitual use of the drug.

Since the drugs most generally administered internally by the dental practitioner are those having the most powerful anodyne and hypnotic properties, I will here discuss a few of the more important of this class of drugs. For convenience, I will divide this general class into three sub-classes, namely, alkaloidal, hydrocarbon, and the coal tar derivatives.

Alkaloidal.—Alkaloids are the basic properties found in plants and belong either to the amines (compounds containing carbon, hydrogen and nitrogen) or amides (compounds containing carbon, hydrogen, nitrogen and oxygen). The amines are liquids and volatile, while the amides are solids and almost non-volatile. Most alkaloids have certain properties in common, such as alkaline reaction, bitter taste and decided physiologic action, soluble in chloroform, ether and alcohol, but very sparingly soluble in water. When these simple alkaloids are acted upon by acids there are salts formed which are named like other salts of these acids, such as hydrochlorate, sulphate, acetate, etc. These salts possess just the opposite soluble properties to the simple alkaloids, i. e., they are sparingly soluble in chloroform and ether, more freely soluble in alcohol, and freely soluble in water.

While this sub-class contains a number I will only dwell upon one, and that morphine, which I consider the most important of all hypnotics and anodynes, also the most used, as well as the most abused. Morphine is the principal alkaloid of opium, obtained from the milky exudate of the unripe capsule of the poppy. This alkaloid itself is seldom administered, and when the effect of the drug is desired it is prescribed in the form of a salt, either the hydrochlorate or sulphate. These salts, being soluble, neutral and non-irritating, are desirable preparations for use, and are commonly found in commerce, both in bulk and tablet form. Morphine

is a drug used against conditions and not against disease, since it contains no curative properties, and the condition for which its action is specific, also the condition which to a great extent governs the dosage, *is pain*. Its decided action in this respect makes it one of the most useful systemic drugs in the pharmacopeia with which the dental practitioner has to deal. If immediate effect be desired the drug should be administered hypodermically in $\frac{1}{8}$ to $\frac{1}{4}$ grain doses, in combination with $\frac{1}{120}$ grain of atropine. The size of the dose depends upon conditions, such as intensity of pain, etc., as pain seems to be a direct antagonist to morphine.

The cases in which we, as dentists, are called upon to administer this drug most frequently are those of severe pain resulting from facial neuralgia, acute alveolar abscess, etc., which we can not relieve by any local means. In these cases I have for some time used with very pleasing results in combination with morphine, antimony and potassium tartrate, for its diaphoretic effect, and strychnia sulphate as a physiologic antagonist.

The following formula may be used:

R	Morphinae Sulphatis,	grs. i
	Antimonii et Potassii Tartratis,	grs. $\frac{3}{4}$
	Strychninae Sulphatis,	grs. $\frac{1}{10}$
	Sacchari Lacti,	grs. xxx
	M. Ft. Pulveris, No. 8.	

Sig: One powder every half hour ($\frac{1}{2}$) until relieved or until four have been taken.

One thing to be constantly guarded against is to give this drug in such a manner as to prevent the individual becoming addicted to its habitual use. This can best be done by dispensing the drug yourself, or if a prescription be given, there should always be written: Do not refill.

Morphine should scarcely, if ever, be administered to children; if administered the dose should be much less than the rule would indicate, and then in combination with some other drug. Morphine should not be administered to nursing mothers, as a certain amount is secreted through the mammary glands, and may produce morphinism in the suckling; neither should it be given to individuals suffering from chronic nephritis or pulmonary affections associated with embarrassed respiration.

Hydrocarbons.—Most of the members of this sub-class have hypnotic and anodyne properties, but a great many of them possess other properties which bar their use for this purpose. Of the members indicated for these properties the oldest, most used, and one of the most valuable is chloral hydrate. Chloral hydrate is prepared by the action of dry chlorin upon absolute alcohol, and appears in commerce in the shape of colorless, transparent crystals, having a bitter taste, pungent odor, and neutral reaction. It is depressant to the cerebral, medullary and spinal centers, also to the muscles of the heart. In medicinal doses it acts upon the brain cells, only lowering the mental activity, and in this way producing sleep which resembles the natural, and is not followed by headache, depression, and other uncomfortable symptoms, which usually follow the administration of morphine. It is borne well by children, and is an excellent remedy for infantile convulsions, which are common occurrences during dentition.

In conjunction with the bromide of sodium, it is probably the best remedy at our command for this purpose. This is a convenient formula:

R	Chloralis Hydratis,	grs. xxx
	Sodii Bromidi,	grs. xvi
	Aquae Cinnamoni, q s ad	℥ ij

M. Sig.: 5 doses as indicated, for child of two years.

Although inferior to morphine for the relief of pain, chloral is a very useful substitute in cases in which the pain is of moderate intensity, or when an idiosyncrasy exists for the former. These two drugs may be administered in one solution to a good advantage; as one seems to aid the action of the other a combination of this sort acts with pleasing results when administered to nervous patients a short time before a dental operation. I find the following proportions most desirable:

R	Chloralis Hydratis,	grs. v
	Morphinae Sulphatis,	grs. $\frac{1}{8}$
	Aquae Cinnamomi,	℥ i

M. Sig.: Give in one dose.

Butyl-Chloral Hydrate.—This drug is prepared by passing chlorin gas into acetic aldehyde. It comes in commerce in thin white scales of silky luster, peculiar odor, bitter taste and neutral

reaction. It is used as a substitute for chloral hydrate in cases of heart disease, and where very large doses are required for hypnotic effect. It has practically no narcotic action, which makes it a desirable drug for administration where hypnotic effect only is desired. Its dominant action, however, is upon the fifth nerve, this fact making it of vast importance to the dental practitioner.

The following formula is a convenient mode of administration:

R	Butyl-chloralis Hydratis,	3ii
	Alcoholis,	
	Aquæ Cinnamomi, aa.	3i

M. Sig.: One 3 every half hour, until the desired effect, or until five doses have been taken.

Coal Tar Derivatives.—This sub-class was discovered by chemists and pharmacologists in an endeavor to find a cheap substitute for quinine. Although the search did not bring about the desired end, it brought to light a number of very valuable substances, some even of more value than the alkaloid sought.

These substances contain a number of actions in common, such as antipyretic action upon the heat center, often associated with free perspiration, which is of advantage in many cases where the dentist is called upon to administer this class of drugs; the formation of methemoglobin; and the action in which we, as dentists, are most interested, that upon the central nervous system. This action is as yet very poorly understood, but that it does exist has been proved by the relief given when administered to individuals suffering from such nervous disorders as neuralgia, headache, etc., without affecting the movements or consciousness. The members of this sub-class most universally used for their hypnotic and anodyne properties are:

Acetanilid—prepared by the action of glacial acetic acid upon anilin, a white shining crystalline powder, odorless, of a burning taste and sparingly soluble in water, but freely soluble in alcohol.

Phenacetin—prepared by the action of glacial acetic acid upon an anilin derivative. It occurs in crystalline scale, colorless, odorless, tasteless, sparingly soluble in water, but more freely soluble in alcohol.

Antipyrin—this being a synthetic compound made and put on the market by a monopoly. Its contents are not known, but it is now generally conceded to be formed by the action of diacetic ether upon

an anilin derivative. It occurs in colorless, odorless, scaly crystals, with bitter taste, and, unlike the other two, freely soluble in water.

These drugs may be used with good results in combination with sodium bicarbonate and caffein citrate, a desirable formula being:

R Acetanilidi,	grs. xviii
Sodii Bicarbonatis,	grs. xx
Caffeinæ Citratis,	grs. viii

M. Ft.: Pulveris, No. 6.

Sig: Take one powder every hour until relieved, or until four have been taken.

If immediate effect be desired, or you want a more powerful anodyne than acetanilid, and morphia being contraindicated, a very useful remedy may be had by adding to this formula two grains of codeine, which is an alkaloid of opium, but much less toxic than morphine.

These preparations should be given with utmost care to individuals affected with tuberculosis or other adynamic diseases. When administering to children we should give a much smaller dose than the rule would indicate, since there are many fatalities on record from the administration of these drugs to children; neither should they be administered to nursing women, since they have been frequently detected in the lacteal secretion.

We should also remember that idiosyncrasies are not uncommon, and always begin with smallest dose and gradually increase until the desired effect, unless that would require more than xxx grains of acetanilid, which is the most toxic, or 13 of antipyrin or phenacetin in twenty-four hours, which amount should never be exceeded.

In conclusion, allow me to repeat, if we as a profession desire to continue onward and upward in the future, as we have in the past, occupy the place we deserve among the learned professions, and continue advancing in the minds of the public, one of the channels open for advancement is the study and administration of drugs for their systemic as well as their local effect.

NOTES ON THE TREATMENT OF TWO CASES OF EPULIS.*

BY DR. H. J. MOORE.

As far as my experience goes, one rarely meets with a case of Epulis in an ordinary dental practice, and for that matter I do not think that they are much more common in a medical practice either.

This to me seems rather strange, and also something that we, as dentists, may be thankful for, when we consider the appalling amount of irritation that the gums seem to be able to stand, both from the ravages of pyorrhea, from ancient plates that are cherished as heirlooms, and from fillings that have never reached the polishing stage. Still they do crop up occasionally, and then of course comes the question of treatment.

I think we were all taught in our fast receding college course, that an Epulis must be taken away surgically, with the possible loss of one or two teeth, and perhaps a part of the alveolus. Anyhow, the worse the Epulis, the more thorough the surgery.

About seven years ago a patient developed an Epulis between an upper cuspid and first cuspid. It spread from the buccal to the lingual side of the mouth and bled freely whenever touched. As the patient was expecting a child in three or four months, both her doctor and I did not view a radical operation with very great favor, apart from the deformity caused by having to sacrifice two such prominent teeth; so it was decided to try injections of arsenic into the tumor.

Her medical man, Dr. Roediger, told me he had tried this method before, but unsuccessfully; still, under the circumstances, we thought that even if it did nothing more it might keep the tumor from growing, and then, perhaps, after the child was born we could better explain the necessity of treatment by surgery.

Under the injections the Epulis gradually dried up and disappeared, and today, after six or seven years, the gum at that spot looks as healthy as at any other part of the mouth and there has never been the least sign of recurrence.

Had this been the only case that had come under my notice I should not have troubled you with it, as I thought at the time that the cure was pure luck, and also perhaps due to the changes that occur

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at childbirth, but about two years ago another patient came along with a small Epulis growing by the buccal side of a first lower molar.

It was of a totally different kind from the other, being hard and of about the size of a small pea, with a well-defined root.

Her medical man was told my opinion of the swelling, and on again examining it he fully agreed with me and undertook the treatment, which the patient afterward told me was by no means pleasant and caused a good deal of pain; still it has been entirely successful and everything today is perfectly normal in her mouth.

Both these cases presented themselves in pregnant women, and I have often noticed that at such a time there is a marked change in the gums; they become very vascular, bleed easily, and the whole mouth looks as if it were attacked with pyorrhea.

I asked my friend, Dr. Roediger, to give me the details of the treatment, which he sent me as follows:

"The solution used is a 1 per cent solution of white arsenic in water. Of this a few drops are injected into the growth in such a way as to get as thoroughly as possible into the root or starting point. The injection is made at first every other day, later on every day till the tumor has disappeared, which you may expect in three or four weeks.

"If, however, after some time the treatment does not prove to be successful, a 2 per cent solution should be used.

"For making the injection an ordinary hypodermic syringe is used with a freshly sterilized needle having a short point, as with this kind of point one can get the solution down better into the root of the growth at the periosteum.

"Inject a drop or two at first as deep down as possible, then pull back the syringe a little and inject a little more, and then leave the needle in.

"Keep that position for a minute or two to allow the tissues to absorb the liquid.

"In this way you will have very little bleeding, even if the tumor is very vascular.

I hope if you ever have occasion to try this treatment it will prove as gratifying to your patient as it has to mine.

Before sitting down I should like to pass round a model showing an addition to the angle regulating arch that I have found useful.

It consists of a small tube on which is soldered a half ring of fine wire making a kind of pulley.

The tube must just fit the wire of the arch and can be attached at any desired point with a little lead solder.

By tying the tooth that is to be moved out into line, or twisted, with a fine waxed silk, and passing the ends of the silk through the loop, you can tie them to a small rubber ring which has been tied at some distance to the threaded part of the arch, and by this means you get the constant pull of the rubber on the tooth that is to be regulated.

PAINLESS EXCAVATING, AN OPEN QUESTION.*

BY DR. WILLIAM HIRSCHFELD, PARIS, FRANCE.

Mr. President and Gentlemen:—If you try to discover the reason for not having yet found a satisfactory method to excavate teeth without pain, you will come to the conclusion that it rests principally with the uncertainty, if not ignorance, which we are in, concerning the precise nature of the dentinal fibers. Since the time of their discovery through the researches of Nasmyth and Tomes a good many writers like Beal, Howard Mummery, Magitot, Neumann, Romer and others have gone into closer investigations on the contents of the basis-substance of the dentin, but their results have not thrown any special new light on this question, and above all, are not at all alike. While Magitot, for instance, states that the contents of the dentinal tubuli are fluid or semi-fluid, meant to nourish the tooth, most of the others declare them to be the processes of the odontoblasts of the pulp. This is also the opinion of a modern English writer, Mr. Hopewell-Smith, whose work on the histology of the teeth may be well considered as the summing up of all that has been published on this particular subject. In his conclusions he comes to the following points:

“It is evident that the contents of the tubuli are protoplasmic processes or fibrils, which emanate from the odontoblasts of the pulp. They represent their distal or dentinal processes.”

For us practitioners, the essential point is to know that these

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fibrils are positively the continuation of the pulp-substance. This being a fact, easily proved by the absence of sensitiveness in excavating after the death of the pulp, we should in our dental operations consider even the smallest tooth-cavity not as a simple defect of tooth-substance, but actually as a lesion of both dentin and pulp. Whether the pulp is exposed as a body or simply in its branches, the dentinal fibers, the effects are the same in their manifestations; in either case the tooth will react painfully to the touch of our instruments. The only difference between the exposure of the pulp substance and the exposed dentinal fibers is that the real pulp is noticeable to the naked eye and has to be removed to insure the conservation of the tooth, whereas the dentinal fibers require a strong microscope to be distinguished and are supposed to continue their vitality although remaining in direct contact with an inorganic matter as our filling materials are.

In consequence the problem of painless excavating presents itself as follows:

"To find a medicinal agent which by simple contact with the bare dentin will produce instantaneous anesthesia of the dentinal fibers, without danger to their future vitality or the pulp."

The various methods which have been tried by the profession to realize this important question can be easily divided into two distinct chapters:

First. Experiments to diminish the sensitiveness of the dentin by direct application of drugs, or, if you will allow me to say, by direct anesthesia of the dentin.

Second. Experiments to diminish the sensitiveness of the dentin by trying to act on the pulp, methods which may be called general anesthesia of the tooth.

Gentlemen, whatever we have done in the past in the way of excavating teeth without pain by means of medicinal agents shows simply what erroneous illusions we have been under. Taking as a starting point the effects which obtundents produce on soft tissues, we thought that they must necessarily act likewise on hard dentin. Now let me ask you, have you ever been able to excavate an average cavity with less pain by the simple application of cocaine, oil of cloves and so forth on a piece of cotton? Have you ever diminished the sensitiveness of the dentin by the use of an escharotic like carbolic acid or creosote? Perhaps you have, but only under very limited con-

ditions, presenting the following characteristics: The tooth must be decayed far enough so as to leave near the pulp nothing but a layer of soft dentin. Softened dentin will not oppose a rigid obstacle to the penetration of the obtundents into the pulp-mass, but on the contrary will facilitate their passage. In these cases it does not matter what remedy we apply, whether cocaine, oil of cloves, carbolic acid or any patent obtunder, provided we do not use it on solid tooth-bone.

Different are the conditions in teeth where the decay has simply caused loss of the enamel or part of the dentin, leaving a hard solid surface, which is the case in most of our operations. No obtundent can possibly have here an immediate action, and in a good many cases, as in cervical defects or in children's teeth, the only thing left to diminish the sensitiveness in excavating is to make applications with crystals of carbolic acid, fill the tooth temporarily and allow this escharotic to be of benefit in giving it ample time to act.

Unfortunately this means a period of at least from four to six months. All of our efforts to get more rapid results with this method, in allowing the carbolic crystals to remain in the tooth a couple of days only, will prove a dead failure.

Some chance to obtain immediate good effects we may find in applying our medicinal agents in a hot condition. This observation we owe to Dr. Jenkins who first advocated the use of hot carbolic acid to diminish the sensitiveness in excavating. The good results of this system undoubtedly are due to the fact that heat will allow the carbolic acid to penetrate the dentinal fibers sufficiently deep to produce local anesthesia. This principle of using remedies in a heated condition may be successfully extended to others besides carbolic acid. Any obtundent, any escharotic, any combination of all these specifics will be somewhat effective if used hot. Yourselves, gentlemen, you have probably all worked on this line and could recommend different mixtures with the assurance of approaching the desired result. Dr. Younger, for instance, recommends most emphatically a saturated solution of cocaine with adrenalin.

However, all these methods will not show such results as to rely on them in all cases. The harder, the more normal the dentin is, the less action our drugs will have, and the question, how to excavate the average cavity without pain, seems to limit itself to our old classical remedies: Perfect dryness, sharp instruments, hot air.

So, at least, the question looked at the time when cataphoresis brought it to a new point of view. The principle of this method was the first attempt made to excavate teeth without pain after general anesthesia of the tooth by the action of a narcotic on the pulp through electric currents.

This entirely new process appeared as the definite solution of the problem and was taken up at its *début* by the profession with great enthusiasm. But soon we had to face the clear evidence that cataphoresis as a practical method was far from perfection. Its complicated employment, the uncertainty of its results, the slowness of its action, the possible injury to the pulp, all of these objections were strong enough to decide most practitioners to give it up completely. But at least the principle was found: cataphoresis created a base which has induced others to work on.

Let me say, for instance, a few words on a German invention, the eusemin, which also is intended for general anesthesia of the tooth.

Dr. Rosenberg, the inventor of this method, which has met with great favor all over Germany, thought that if he could anesthetize the pulp by interrupting its sensitiveness right at its origin he would necessarily deaden the entire tooth. To realize this idea he makes injections of his mixture—which now-a-days is known to be a dosage of cocaine with adrenalin—right at the very apex of the tooth, and thus will produce, after a few minutes, perfect anesthesia of the nerve fibers. The inventor presented his system particularly in view of immediate extraction of a live pulp, but it is also of benefit for the painless excavating of sensitive teeth.

Although supposed to be absolutely harmless, which is the sincere opinion of the best German practitioners, I personally feel some apprehension to proceed by subcutaneous injections, and still more so in France, where the use of narcotics is strictly limited to the medical men.

Certainly less dangerous is the application of an absolutely new method of pulp-anesthesia invented by an American practitioner, Dr. Meyer of Cleveland, whose invention I do not hesitate to consider as a big step in advancing the question of painless excavating.

Starting from the fact that no obtundents—as far as we know them—will penetrate into the dentinal fibers under ordinary proceed-

ings, Dr. Meyer thought that by extraordinary pressure he could arrive at a good result. His instrument, which some of you saw presented last year in St. Louis, to accomplish this does precisely the same as the Pravaz-syringe does for soft tissues. It is, strange as it may sound to you, nothing but a subcutaneous syringe for the dentin. His way of operating is identically the same as making an injection with the Pravaz. He first makes a tiny opening into the dentin, just sufficient to get a hold for the nozzle of the syringe and then forces the liquid into the dentinal tubuli by using all his force.

The effect of such an injection is simply stupefying; the most sensitive or even hypersensitive cavities get absolutely numb after a few minutes, and the tooth can be prepared for any kind of filling, without the slightest pain to the patient.

Of course you see at once where this method is lacking. To ask a patient to endure the drilling of the retaining hole is not exactly welcome to everybody; then to get the liquid well into the tubuli needs a considerable amount of force from the operator; we have to wait at least five minutes to see the effect take place, and finally the drug by penetrating into the dentinal fibers might possibly injure their vitality and consequently cause the death of the pulp.

All these objections are serious enough to prevent this system from getting into general use and, I am afraid, will limit its employment merely to desperate cases of hypersensitiveness where all other means of obtunding may fail. But this method is certainly an immense advance over all others and perhaps with the right improvements will be of great use to the profession.

This, gentlemen, is about all we can present in the way of overcoming pain in preparing cavities.

If now we may weigh, free from partiality, the advantages and disadvantages of all these methods, we finally must come all of us to the one and same conclusion:

An absolutely sure agent, the one which will, under all circumstances allow of immediate painless excavating without danger to the pulp, does not exist. The question of painless excavating still remains entirely open.

But on the other hand, have you ever thought of what operative dentistry will come to, if this important problem finds its sure solution?

No matter how we improve our methods of filling teeth, our filling materials, our systems of spanning over—casting bridges on sound teeth, if all these improvements are gained without taking into consideration the pain they will cause the patient, they will never advance dentistry effectively.

We often take pride in comparing our work to general surgery; but have we forgotten that it was merely the discovery of general anesthesia which has advanced surgery to what it is in our day?

Where is the surgeon who would think today of performing an internal operation without first doing away with all pain? Should it not be precisely the same with us dentists? You may answer that the suffering in connection with dental work is not to be compared with the pain caused by a long surgical operation; but the patients who do not want to stand even the short cavity preparation are getting more numerous every day. The majority of patients will prefer any kind of easily put in fillings, provided they are done quickly and without pain.

This is actually the cause which has opened the door to a certain kind of operative dentistry, which the conscientious practitioner would not hear of, but which is claimed more and more by the patients, at least it is so with us in France. Under such conditions dentistry cannot advance, but only retrograde.

Gentlemen, I have absolute conviction that the coming generation of dentists will look back to our present way of operating as a barbarous one, and that the time is not far distant when the first thing in filling teeth will be to do away entirely with pain before commencing to excavate a tooth. And when I say that this time is not far distant, it is because what has been done up to now will induce others to study this problem. It may take years and years yet, before we shall know all about the precise nature of those mysterious fibrils, but the man who will take seriously to heart to study their minute anatomy, their reaction to chemicals and so forth, may, in the end, succeed in finding the remedy which will always and instantly produce anesthesia of the dentin.

Let me apologize for having presented you today this question in its incomplete state, but let me hope that it will be one of you, gentlemen, who will soon put the roof on this unfinished house.

A FEW SUGGESTIONS FOR YOUNG PRACTITIONERS.

BY DR. J. N. C. MOFFAT, HOUSTON, MISS.

I think one of the greatest mistakes most dentists make is to be satisfied.

When a man leaves school he thinks he knows the standard textbooks and he resolves to keep in touch with the profession by reading good journals, and exchanging points of interest with his brother, but his resolution soon disappears and he settles down with the conviction that he can fill a tooth or make a crown as well as anyone and it is only a question of time until that is about all he can do.

When a man enters any association in life, if he be worthy of respect, he realizes that there is a future and that in that future he is to be regarded as a success or a failure. Now, the question arises, what are the essential requisites to success? Why are there so many failures?

We find failures in the professional world among men who, for ten years or more, have toddled through our schools and institutions of learning propelled by no other incentive than parental influence.

For a man to succeed he must select some avocation in harmony with his natural instincts, weigh carefully the difficulties to be confronted and strive, in every way, to attain the goal of the future which his ambitious fancy might picture.

He should determine to exert his best energy and leave no stone unturned to acquaint himself with every detail pertaining to his chosen profession. When he has carefully selected his location, his success is assured if he will: First, be careful in selecting his associates, and show that he is worthy of confidence. Second, if he will select a good location for his office and expend as much money as practicable in fitting it up with the necessary instruments, etc. Third, if he will keep his clothes and person neat and attractive and his office and instruments immaculately clean. Fourth, if he will have his office hours and be found ready and agreeable at any time within those hours.

The greatest interest a dentist can receive for his money is that which will accrue from the cost of one bar of soap and a laundry bill.

He should make it a point to keep several good journals in his

office and should not only read them but try to contribute something.

A little hint which might seem to you very insignificant will do someone some good, and every little case out of the ordinary which comes to you will be read with interest by numbers of the more ambitious practitioners.

Interchange of thought in our journals, even along lines which have already been written up, will do much to keep the profession stimulated to do better and better work.

PENETRATION OF DENTINE BY FLUIDS UNDER PRESSURE. *

BY W. A. JOHNSTON, M. D., D. D. S., PEORIA.

On the Atlantic coast line there is a place called Point-no-Point and the fishermen in the neighborhood speak of it in this doggerel:

“Point-no-Point,
Point out, point in,
Then point agin.”

Their reason being, that the coast line is so crooked and the Point so hard to reach that when you see it you miss it and when you don't see it, you are right up against it.

As you will see, this paper reminds one of Point-no-Point, and I beg of you, do not take it too seriously.

In order to start right, let us review our Dental Anatomy a trifle. In this case we are concerned only with the dentine, as we do not expect to penetrate the enamel nor cementum with any fluids which will affect the sensation of the tooth.

The illustration shows the fine dentinal tubules, through which we expect to reach the pulp. When decay has invaded this portion of the tooth, there seems to be a series of rather direct channels leading to the pulp.

When our patients are hurt during the excavation of a cavity, and insist that we “touched the nerve that time,” we tell them that we cut across these channels and that the protoplasmic matter contained therein, has sent a message of pain to the pulp, but that no

*Read before the Illinois State Dental Society, Moline, May, 1905.

harm has been done. This explanation usually goes, but the patient warns us not to do it again.

It is generally conceded, I think, that the application of obtunding agents to the pulp itself is something to be avoided, if possible, unless the pulp is to be destroyed.

The pulp of a tooth is such a delicately organized structure, and so easily inflamed, that nature has very carefully protected it in a bony box to keep it from exposure, wounds or irritants. For this reason we must not introduce any foreign substances into the pulp for fear of making trouble.

Years ago arsenic was frequently applied to the cavity of a tooth to control the sensitiveness of the dentine. This has been abandoned by thinking men because there was no way of limiting the action of the drug to the portion intended to be cut out.

If it were possible to desensitize a portion of the dentine, and before the medicine used had penetrated too deeply, to prepare the cavity, cutting away all the dentine affected by the obtunding agent, at the same time removing all the medicine, so that no subsequent trouble would occur, then indeed would our work be simplified and painless dentistry be an accomplished fact.

Before I began the study of this subject, I saw some teeth injected with red ink which led me to think that possibly by forced injections of cocaine solutions, it would be possible to desensitize circumscribed areas in the dentine without injury to the pulp.

The problem looks simple enough at first glance, but sober second thought presents an appalling array of difficulties.

If all teeth were of the same texture, we would know just how long a given amount of force would take to produce a given amount of penetration. Here is difficulty number one. The teeth of no two persons are equally dense. They vary with age, sex and structure to such an extent that no one can predict exactly how much pressure he must use to penetrate a certain distance in a given time. We may, after long practice, make a fairly shrewd guess, but that is all. The best guesser will have the best results, and if given too much to guessing in our daily work, our statements in public meetings will be largely of the same character, and our hearers will soon discover that we draw upon our imaginations for our facts. Difficulty number two occurs when we strike a tooth with a minute crack ex-

tending directly through the dentine to the pulp chamber. I did not know that such a thing were possible until I began working on this paper.

I had seen minute cracks in teeth examined microscopically, but supposed they were caused by carelessness in the preparation of the specimen. In several cases, however, I have injected the medicine through the crack and only discovered its existence when grinding down the tooth.

You can imagine a dentist's disgust if he were trying to force just a little cocaine into a superficial gingival cavity to relieve the pain of excavating and discovered that he had forced enough of the medicament through an abnormal channel to cause inflammation of

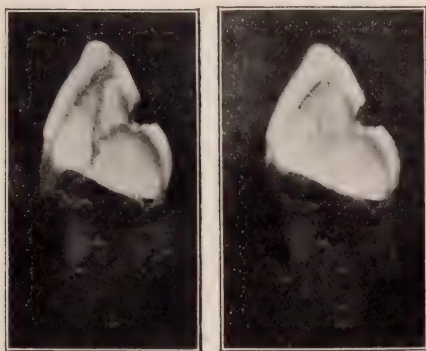


FIG. 1.

Gentleman of 60. Injection of red ink, three minutes, by Dr. Kramm.
Penetration only along cracks.

the pulp. Two examples will suffice to illustrate this condition. The first, a fresh upper cuspid from a patient sixty years of age, injected with red ink, by Dr. Kramm. There was no penetration of dentine in three minutes, but the ink found out the cracks fast enough and penetrated to the pulp chamber (No. 1.)

The other case is that of an old lower central incisor, No. 2, freshly extracted. A solution of Adrenalin-cocaine, in normal salt solution (11 gr. to 4 ounces) was injected at the cervico-lingual margin. The red line shows a distinct crack through which the solution, colored with Grubier's magenta red, penetrated to the pulp in thirty seconds. It is true that trouble does not always follow the introduc-

tion of a minute quantity of cocaine into a healthy pulp, but there is too much danger in it to warrant taking the risk unnecessarily. Dr. Wilcox of Cleveland, inventor of the obtunder bearing his name, writes me as follows: "I have given a great many successful clinics with the Wilcox-Jewett Obtunder, in fact I have never had but one failure. That was an inferior first molar, patient about thirty. Amalgam filling had been removed from cavity. Was quite sensitive. The injection of 10 per cent solution of cocaine had no effect. I do not know why. As I was operating by request in another dentist's office, had no opportunity to investigate as I should have done, had the patient been my own. I judge that either there was a deposit of secondary dentine, or metallic oxides in the tubuli."



FIG. 2.

Pencil sketch of old lower central incisor. Adrenalin-cocaine-salt solution, injection three minutes into incisal edge. No penetration on account of pulp stone. Lingual surface reached pulp through crack—thirty seconds.

Such a condition would no doubt present a serious difficulty. While it may be generally possible to succeed with young teeth, it is sometimes impossible for me, at least, to get any results with teeth of elderly persons who are addicted to the use of tobacco. One specimen I have with me is from the mouth of a gentleman, sixty years old. His wife told me that he came from Virginia and had used tobacco since he was a baby. Two five-minute injections of methylin blue in a cavity drilled into the cervix failed completely. Dr. Willetts of Pekin, coming into the office, also tried and failed after three minutes effort. The dentine was either too dense naturally or else the tubuli were so filled with nicotine that thirteen minutes

pressure had no effect. Practically I suppose there would have been no need to inject anything into this tooth as there would have been no sensation anyway, but it serves to show that every tooth cannot be pumped full of fluid even if considerable persistent pressure be used.

When we wish to use pressure anesthesia to destroy a pulp, our object is to get the medicine to the pulp itself by the most direct and expeditious route.

We have all been annoyed by the loss of time necessary to get into the pulp chamber so that the cocaine could be applied directly to the pulp.

The photograph shown (No. 3) illustrates fairly well the amount



FIG. 3.

Molar—middle-aged man. (Dr. Willett's case.) Occlusal surface cleaned out and hand pressure used three minutes. Saturated solution of cocaine in adrenalin. No results to naked eye.

of penetration produced by five minutes' pressure with a ball burnisher on a pledget of cotton saturated with adrenalin-cocain and covered with soft rubber. If I were doing this in the mouth I should press awhile, then cut as far as possible, apply more pressure, and cut again. At the rate indicated on the photograph it would have taken forty minutes to have reached the pulp. Without any pressure it might have taken twenty-four hours longer.

Realizing the need of saving time in these cases, some of our inventive friends have produced appliances for forcing medicines into the substance of the tooth.

All of these instruments have barrels like hypodermic syringes,

made very strong and furnished with needles, cut off square and sharpened so that they act as trephines.

The idea is to sink the needle into the dentine so as to have such firm contact that no fluid will be forced backward around the needle. The force is applied by direct pressure in the Beekton Dickinson of D. P. Company, by levers as in the Myer's, by a ratchet in the Wilcox-Jewett obtunder or by a screw which operates against a spring in the Higgins instrument. (See obtunders.)

The last named seems to meet the requirements of the case very well, as the point is fine, and the pressure can be applied with one hand, while the instrument is held with the other.

This insures a steadiness which is very hard to attain in the



FIG. 4.

Girl of 12. Fresh tooth. Three minutes' injection with methylene blue penetrated to pulp.

Wilcox-Jewett appliance and I fancy the same objection would hold good in the Myer's instrument though I do not own one and have never tried it.

I have had failures with the Wilcox-Jewett because I could not hold the machine still for three minutes and pull the trigger at the same time. I have had successes too, as some of my pictures show, and the failures may all be my own fault.

I have been uniformly successful with the Higgins obtunder, so I like it better, but I do not own stock in either company and am not here to advocate any special instrument.

The next speaker may do better work with an old discarded

hypodermic syringe than I can with all three of the instruments mentioned.

A few pictures which I have here show the degree and direction of penetration.

The oval picture on the white card (No. 4) shows a fresh first bicuspid from the mouth of a little girl of twelve. This was injected for three minutes with a solution of methylin blue in water, and then ground down to show how far the color had gone.

The medicine had reached the pulp but had not gone into it.



FIG. 5.

Lady of 30. Three minutes' injection of red ink. Slight penetration.

The oval picture (No. 5) on the dark card was an upper wisdom tooth from the mouth of a lady of thirty, injected three minutes with red ink from the cervico-buccal surface—slight penetration. This would have been a safe case, had I wished to fill a cavity in this position for the medicine did not go near the pulp.

A longer application would have forced the ink into the pulp, no doubt. I have the teeth with me that are shown in the pictures, and if anyone is interested enough later, he may compare the pictures with the originals to verify their accuracy. In the last tooth mentioned, a stain will be seen on the original tooth, in the cavity of decay, extending into the pulp chamber and all around one side of the tooth. This is the result of an attempt to penetrate the dentine by low pressure and long time. I cemented a glass tube a foot long into the cavity of decay, filled the tube with solution of magenta red, and left it over night. The stain, which had not soaked into the cement and the tooth, I found on my carpet.

Dr. Willetts of Pekin furnished me with a young lower molar (No. 6) which I injected through the cavity of decay for three min-

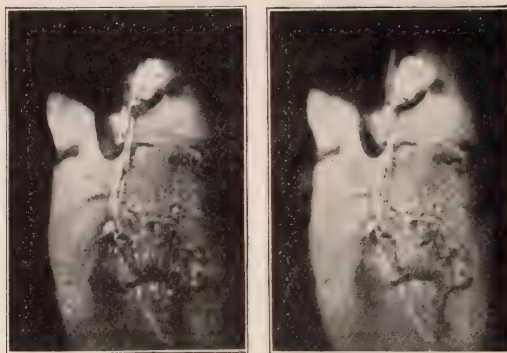


FIG. 6.

Molar of young person. (Dr. Willett's case.) Five minutes' pressure through cavity in occlusal surface. No penetration. Ten seconds' pressure at gingival border, penetration to pulp with cocaine, 10 per cent solution, and adrenalin equal parts.

utes with a 10 per cent cocaine solution without result. Ten seconds pressure in a hole drilled at the cervical portion penetrated the pulp nicely.

Perhaps some one present can tell me why the coloring matter



FIG. 7.

Patient 30 years old. Lower right second molar. Injected through mesio-buccal cusp 4 per cent cocaine, adrenalin and normal salt solution of each 10 minims. Penetration one-eighth of an inch to pulp and one-eighth of an inch downward in the root.

stained the next tooth as it did (No. 7). After it had reached the pulp chamber, why didn't it all go in there in the direction of the



FIG. 8.

Patient 15 years old. Upper molar. Injected from disto-palatal angle, adrenalin, cocaine 10 per cent solution, equal parts. Pressure, two minutes. Penetration to pulp, three-eighths of an inch; in straight line, one-quarter of an inch.

least resistance, instead of following the course it did outside of the canal? This was injected with cocaine 4 per cent adrenalin, ää 4 minims, normal salt solution 10 minims. The patient was thirty years old and the injection continued 2½ minutes.

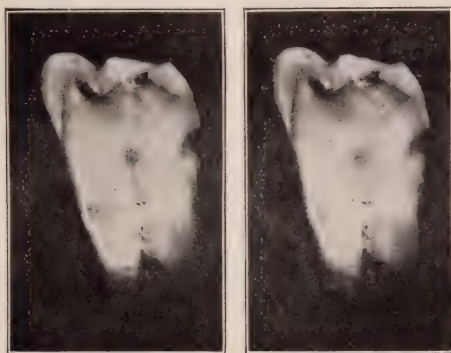


FIG. 9.

Old lower third molar from Dr. Black. Kept in campho-phenique two days. Injected from occlusal surface with normal salt solution, cocaine 10 per cent and adrenalin. Pressure, three minutes. Penetration to the pulp.

The same solution was immediately used on an upper molar of a boy of fifteen. Dr. Willetts and Mr. Gray being present to see that no violence was done (No. 8). In three minutes the pulp was full of red liquid. A lower molar sent me by Dr. Black and kept in camphophemque a day or two, when injected with cocaine and adrenalin shows that the pulp was stained to the very end in three minutes (No. 9).

The picture of the pulp (No. 10) shows that the medicine did not penetrate but a little over half way to the end, yet the operation for removal was perfectly painless. The lady, about sixty years of age, was obliged to have the pulp of the lower right cuspid removed for some bridge work. A small hole was drilled into the dentine until pain was felt and pressure applied with cocaine dissolved in adrenalin,

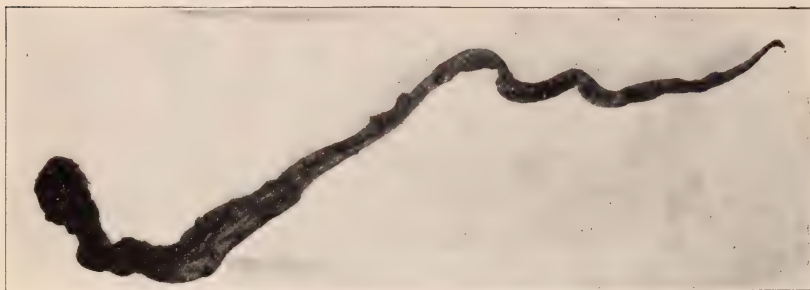


FIG. 10.

Pulp of lower cuspid. Lady of 60. Pressure twice, one-half minute each time. Colored half way to end. No pain on removal.

by guess. Pressure was made half a minute, when the instrument slipped and contact was lost. Then I drilled in as far as I could until again stopped by pain. Pressure applied another half minute enabled me to drill into the pulp cavity and remove the pulp as here represented.

Of course the coloring in the picture is artificial, but it was done from a careful examination of the pulp under the microscope with a three-fourths inch objective.

The same result was accomplished later with Dr. Higgins' obtunding fluid in 1½ minutes steady pressure, the pulp being stained to the end. I do not know the composition of this fluid.

In this unscientific and haphazard way I have produced a few

results under as nearly the conditions met with in the mouth as possible.

Fresh teeth were used and if not able to use the tooth immediately on its removal from the mouth, it was kept in a disinfectant solution and used as soon as possible.

I have not tried to prove anything, but have shown some of my results both good and bad. I have some other specimens in my box, mostly failures, but as they show nothing I have not photographed them.

The twin pictures are microphotographs taken by my friend, Professor Harold Plowe with a four-inch objective, magnifying about twelve diameters. The other pictures are merely enlargements. The coloring was done by a disinterested young lady who was told to copy as nearly as possible the tooth that had been photographed.

The makers of the obtunding instruments promised to send me some samples of their work in injecting dentine, but up to May 6th no specimens have been received. I regret that this work was not begun last May instead of last month.

In a year's time a man might formulate a plan by which he could attain definite results and properly tabulate them, but in a few weeks time, he can only make a crude beginning and for his failure to do better, he must take the consequences when the paper comes up for discussion.

CEMENTS.*

BY GEORGE C. POUNDSTONE, D. D. S., CHICAGO.

A year ago I had the pleasure of reading before this society the results of a series of experiments with cements. A few months later I continued the report of the work before the fourth international dental congress at St. Louis, and it is with a deep sense of appreciation that I again have the honor of appearing before you that I may add to the report some few observations, and possibly conclusions, from my further research upon this subject.

It will be necessary in a measure to review some of the work as previously reported in order to get a more comprehensive view of the entire subject and to set the matter fairly before those who have neither heard nor read the previous reports.

The purpose of this series of experiments is to determine some of the faults in the cements, their causes, effects upon the finished work and their correction, if possible.

The faults are easily found and seem to be numerous enough. Their effects are quite apparent in many cases, while the causes are more obscure, and the correction seems to be a difficult task, the claims of several cement manufacturers to the contrary notwithstanding.

In the previous reports the experiments have been made upon thin films of cement such as surround inlays and they have been considered with the following requirements as a basis for a perfect inlay cement:

1. Capability of being compressed as thin as the matrix used in making the inlay.
2. High adhesive qualities.
3. Absence of expansion or contraction.
4. Ability to resist moisture either within the body of the cement or between it and the cavity wall or the inlay.

In considering the first requirement it was found that out of ten cements upon the market but five could be compressed as thin or thin-

*Read before the Illinois State Dental Society, Moline, May, 1905.

*A part of the illustrations in this paper were first published in proceedings of the World's Dental Congress of 1904 and are used here by permission.

ner than $1/1000$ of an inch. The other five ranged from a little over $1/1000$ of an inch to $1/700$ of an inch in thickness.

The cements for these tests were mixed to a proper consistency for setting an inlay. The mixes were then placed between cover glass five-eighths inch in diameter and subjected for fifteen minutes to a pressure of twenty-five pounds which would be equivalent to one pound pressure upon a surface one-eighth inch in diameter.

Dr. Head of Philadelphia has succeeded in getting a film of cement as thin as three ten thousandths of an inch by triturating

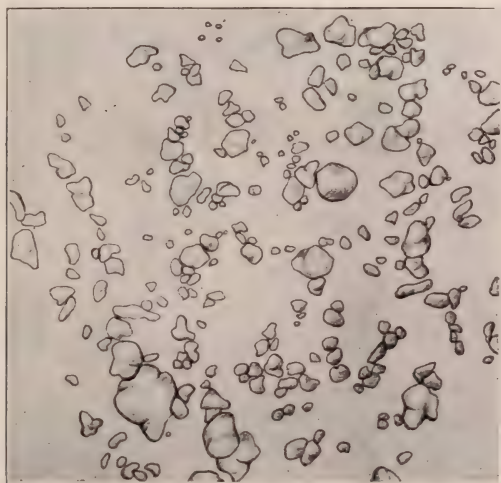


Fig. 1.

Cement A in Glycerin.

the powder in an agate mortar, and subjecting the mix to a pressure of two pounds to the one-eighth inch square.

The amount of pressure seems to be of minor importance as twenty-five pounds will produce approximately the same film that 100 pounds will produce, due to the fact that the approaching surfaces can come no nearer to each other than the diameter of the largest granule of cement between them. Microscopic study and measurements show these granules to vary in form and size from the minutest particles to irregular shaped pieces $1/500$ inch in diameter and in some cases even larger and by carefully watching these larger granules during the process of setting, it will be observed that they retain

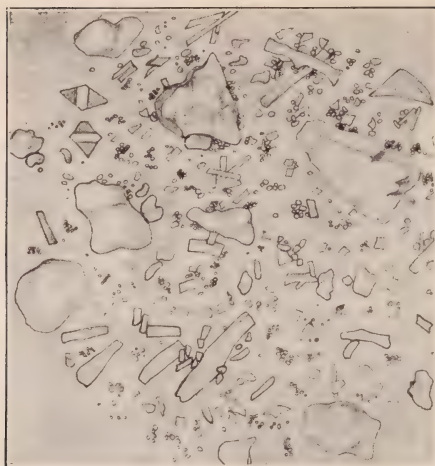


Fig. 2.
Cement B in Glycerin.

their form and size with apparently little change during the first hour at least.

A better idea of the relative sizes of the granules in the different

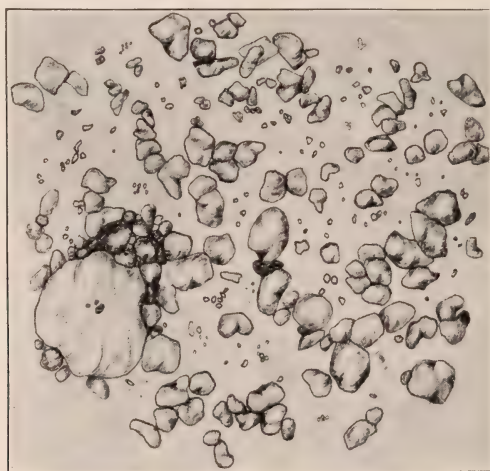


Fig. 3.
Cement E in Glycerin.

cement powders may be formed from the following slides photographed from drawings made to scale with microscope and camera lucida. The powder was suspended in glycerine to prevent chemical action.

The next step was to study the action that takes place in the process of setting of cements. Extreme care was taken in mixing the various powders and liquids according to the directions of the manufacturer of each cement, to a creamy consistency. The mix was placed upon a slide and covered with a cover-glass which was kept

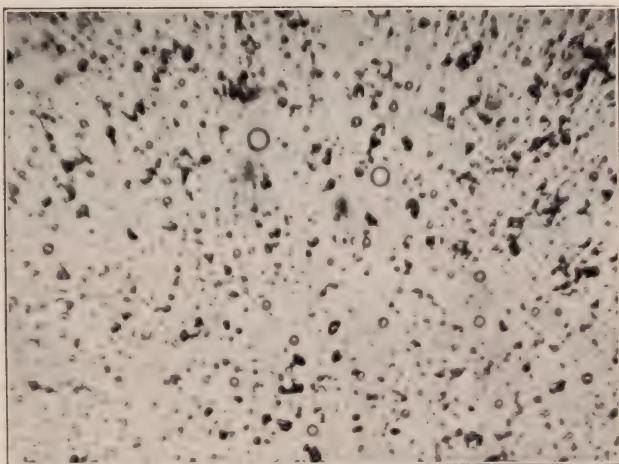


Fig. 4.

Cement A after setting 1 Hour Between Cover Glasses.

under pressure from three to five minutes until all excess had been squeezed out and setting had commenced.

These slides were then placed under the microscope and watched almost constantly for two or three hours, then every hour during the day, and subsequently every day for three months or until all change had ceased.

The results of these observations were quite varied in the different cements, the constant features being the apparent solution of the very fine particles of powder within the first hour or two and the slight change if any in the large granules.

In several of the cements examined, one of the first things noticed in the process of setting is the formation of bubbles apparently

from the chemical action between the finer particles of the powder and the liquid and as these bubbles arise only from the very fine par-

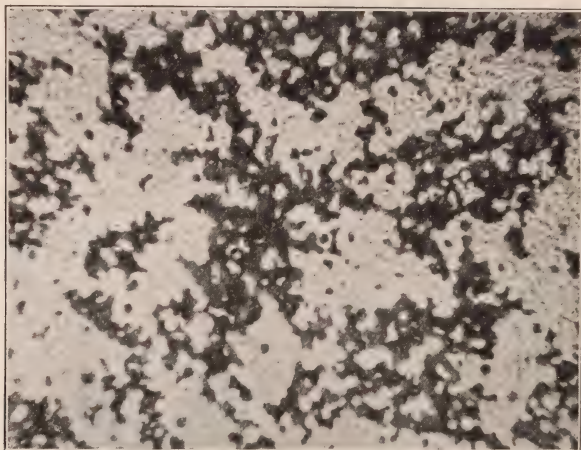


Fig. 5.

Cement A after setting 3 Months Between Cover Glasses.

ticles of the powder and never from the larger granules, which appear to be oxide of zinc, it would lead to the supposition that there is some other substance than oxide of zinc in those powders in which we

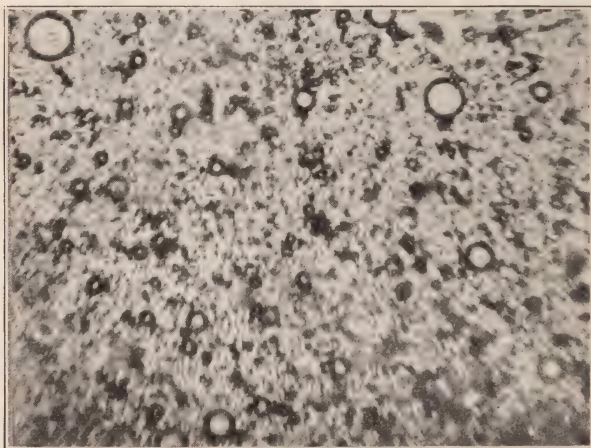


Fig. 6.

Cement B After Setting 1 Hour Between Cover Glasses.

find bubbles. A chemical analysis of the various powders will be necessary to definitely establish this fact.

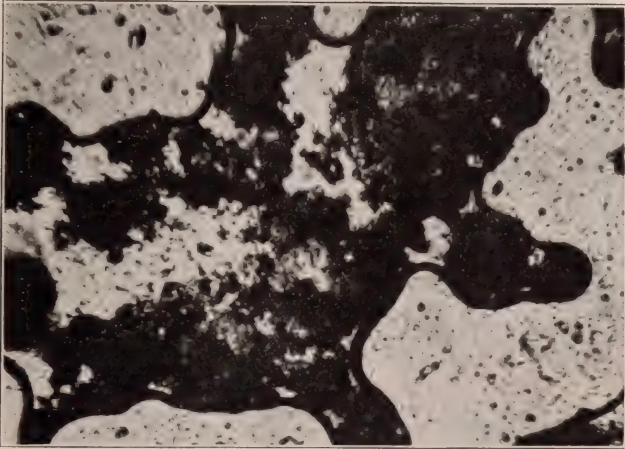


Fig. 7.

Cement B After Setting 24 Hours Between Cover Glasses.

To illustrate the process of setting and the changes which take place subsequently the following slides made from micrographs may give a somewhat clearer idea.

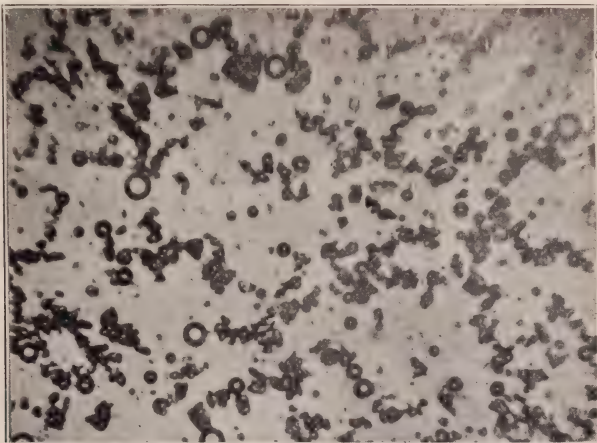


Fig. 8.

Cement E After Setting 1 Hour Between Cover Glasses.

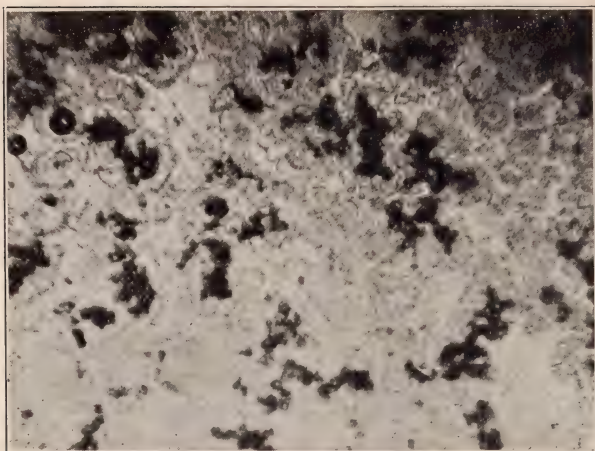


Fig. 9.

Cement E After Setting 3 Months Between Glass Covers.

- | | |
|-------------------------------|---------------------|
| A.—1 hour, 3 days, 3 months. | F.—1 hour, 4 weeks. |
| B.—1 hour, 24 hours. | G.—1 hour, 2 days. |
| C.—1 hour, 4 weeks. | H.—1 hour, 10 days. |
| D.—1 hour, 3 days, 4 weeks. | I.—2 hours, 2 days. |
| E.—1 hour, 4 weeks, 3 months. | J.—2 hours, 2 days. |

In testing for the adhesiveness of the different cements ivory blocks with a surface of 60 square m.m. were cemented together and allowed to remain in the air for twenty-four hours when force was applied perpendicular to the cemented surfaces with results varying from eighteen to seventy-two pounds. The average of a number of tests for each cement ranged from $23\frac{1}{2}$ to $59\frac{1}{4}$ pounds.

Repeated tests were made by cementing the ivory blocks together and immersing them in water, but in each case they were very unsatisfactory.

The penetration of moisture between the cavity wall and the cement is a problem that demands careful attention from the fact that wherever moisture can enter micro-organisms may go and decay result and it is to this particular fact that I desire to direct your attention in this paper.

To determine the extent to which penetration of moisture takes place cover-glasses were carefully etched with hydrofluoric acid and

cemented together with a mix of cement of the proper consistency for setting an inlay. These were kept under light pressure until set when they were placed in water eosin stain and kept in the incubator at 37 degrees C. Of the ten cements included in this test but

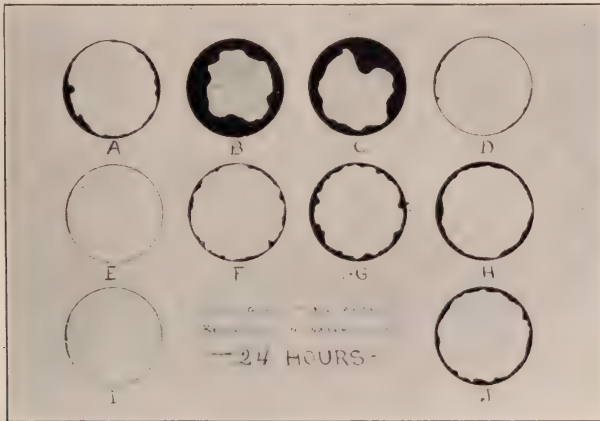


Fig. 10.

two remained at the end of two weeks that had not been completely penetrated by the stain and they both showed some penetration around their edges. Examinations and drawings were made from day to day with the following results:

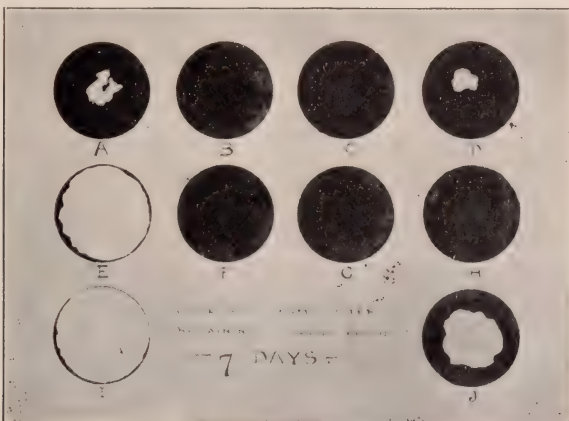


Fig. 11.

The uniform defectiveness of the cements according to this series of experiments led to a goodly amount of study and investigation to discover if something were not wrong with the experiments. Were they proper tests to determine the power of the cements to exclude moisture? The cover-glasses had flat surfaces with no retentive form whatever as would be found in a cavity of almost any shape. There was no pressure to keep the cover-glasses together and it seemed possible that any subsequent expansion of the cement during the process of setting might separate the glasses and if this separation were not perfectly uniform spaces would result and moisture enter. A comparison of the drawings showing the penetration and a previ-

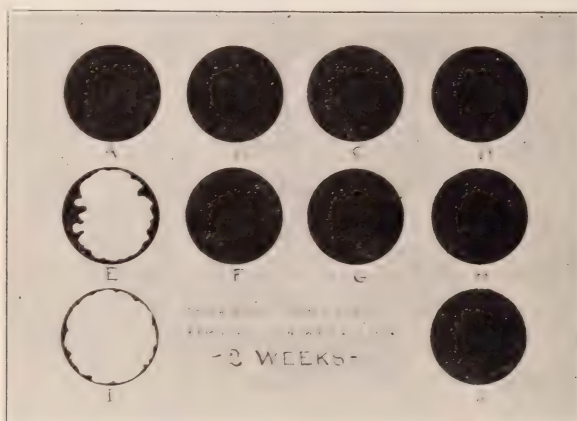


Fig. 12.

ously prepared table showing expansion, revealed the fact that in general those cements that expand most were the same ones that most readily permitted the penetration of moisture. Would this be true in a cavity of retentive form with confining walls to prevent the expansion of the cement or at least to limit it to one direction? A series of tests was then carried through as follows: Glass tubes $\frac{5}{8}$ in. long by $\frac{3}{16}$ in. in diameter closed at one end and carefully ground on the inside were filled with a mix of cement as for a filling. After allowing the cement to set according to the directions of the various manufactures, the tubes were placed in eosin stain and studied from day to day. With one or two exceptions the results were

approximately the same as with the cover-glasses though the penetration of the eosin was much slower in the tubes. All of the cements that expand in setting permitted the eosin to penetrate to the end of the tubes in from three to five weeks, while two cements which do not expand in setting show no penetration whatever after remaining three months in the stain. But what is true for a larger mass of cement as in a filling might not be true for a thin film such as would surround an inlay, so to carry the tests further and that they might more nearly conform to the conditions in inlay work, another series of tubes was prepared. In this series tubes $\frac{5}{8}$ in. long by $\frac{3}{16}$ in. in diameter were ground as before and a second tube ground on the outside was made to fit inside of the first tube, the two ground surfaces approximating each other forming almost a perfect example of a cavity and its inlay. From the former tests and experiments five of what seemed to be the best cements for inlay work were selected for this test. Every possible care was taken in the mixing of the cement, and in placing it in the tube it was thoroughly rubbed into both ground surfaces. The tube representing the inlay was then forced slowly into the cavity tube and any imprisoned air that might be under it was allowed to escape through a very small opening in the lower end of the cavity tube. This opening was then closed by covering it with the finger and the inlay tube forced to position. All excess of cement was then removed and within five minutes the tubes containing cements claimed to be hydraulic were placed in the mouth and allowed to remain there for one hour. Non-hydraulic cements were kept dry for twenty minutes when they were placed in the mouth for one hour. When removed from the mouth the ends of the tubes with cement film between were ground to a perfect joint and the tubes were placed in eosin.

Measurements and drawings were made from day to day with the following results:

A and E show no penetration of moisture, C was completely penetrated in one week, and G and I in two weeks. A and E are the same two cements that as fillings showed no penetration after three months in eosin stain. They are also the only cements tested that do not expand in setting and this, I believe, to be a factor of vital importance either in fillings or in inlay work. Theoretically an expanding cement would make a tighter joint than a non-expanding

one, if expansion and non-expansion were the only elements entering into the practical working out of the theory, but unfortunately there is another factor to take into consideration in the expanding of cement. In placing the soft cement into the cavity it








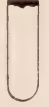







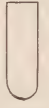














TESTS WITH INLAY TUBES IN WATER EOSIN							
CEMENT	24 HRS.	2 DAYS	3 DAYS	5 DAYS	1 WEEK	2 WEEKS	1 MONTH
A							
C							
E							
G							
I							

Fig. 13.

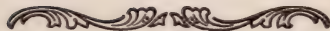
adheres to the rough walls filling all the depressions and irregularities, and if it be not subsequently disturbed will remain in perfect apposition to the walls. In setting, the cement becomes hard and brittle within a few hours at most and if expansion takes place after it is once set as it does in most cements, an imperfect filling must result. The deeper portions of the cement will expand the same as that near the surface with the result that the whole plug will be forced outward and the little projections of cement extending into the depressions of the rough wall must necessarily be broken or loosened

and forced along with the mass. These particles are now set and cannot again adapt themselves to new positions along the walls as they did when soft, with the result that there will be numerous open spaces between the filling and the wall which may be penetrated by moisture. If actual spaces do not exist every part of the filling that has moved, be it ever so little, during expansion, has in a measure or entirely lost its adhesion and by capillary attraction moisture will eventually enter.

In conclusion then, I would say that expansion and the inability to withstand the penetration of moisture between the cement and the cavity wall are inseparable faults and that the adhesion might be amply sufficient if it were not almost at once destroyed by the expansion during and after setting.

This, to my mind, seems to eliminate two of the great faults of many cements or rather to combine three into one, expansion, the correction of which will eliminate the other two. Can this be done? Two manufacturers at least have done it, why not others?

I do not wish to convey the idea that the two cements tested which do not expand are perfect cements. They have other faults, as noted in my paper, "The Cement Problem in Inlay Work," nor are they on a par with each other except in this one particular, absence of expansion.



PROCEEDINGS OF SOCIETIES.

ODONTOLOGICAL SOCIETY OF CHICAGO.

A regular meeting was held February 14, 1905, at the Wellington Hotel, with the president, Dr. J. H. Woolley, in the chair.

Dr. L. L. Davis read a paper entitled "Some Questions Concerning Pyorrhea."

DISCUSSION.

Dr. L. P. Haskell was asked to open the discussion. He said: Mr. Chairman, as you know, I am not engaged in general practice; but this is a subject I have been interested in for many, many years, and I simply wish to call attention to a singular historical event. You have all doubtless seen a picture (and perhaps some of you have seen the thing itself) of a piece of bridgework, the most modern thing in dentistry, from the mouth of an Etrurian. The jaw is supposed to be twenty-five hundred years old, and was taken from an Etruscan tomb, and owned by Dr. Barrett. One peculiarity that impressed me was the fact that the teeth which were being replaced in the mouth had evidently dropped out from some unknown cause. There were four teeth replaced, and what could have caused that condition of things but pyorrhea? The thought has occurred to me a number of times, and I have often wondered if pyorrhea existed twenty-five hundred years ago.

Dr. C. P. Pruyn: I have been very much interested in Dr. Davis' paper, and I am sure we have all been entertained with it. The special points in this paper to my mind are the interrogatories. He cites cases trying to get at statistics to find out whether or not this disease is on the increase. It is a difficult matter to find out whether it is on the increase, but I believe we are recognizing it more and more every year. The fact that the essayist has recognized so many cases of the disease in the second year of his observations, more in the third year, and still more in the fourth year shows that he has been investigating along that particular line. As his attention has been called to it, and his mind is being put more and more on it, he has recognized conditions which previously he did not recognize. If we pursue any particular line of thought, it is wonderful how it grows. For instance, if we notice a man with a clubfoot and are interested

in that subject, we will see many cases of clubfoot. Again, if we see a man with one arm, by observing more carefully than usual we will see other instances of it, and so on *ad infinitum*. However, it will take many, many years and a large number of statistics to prove whether this disease is on the increase or not. We are certainly recognizing it, and in doing so we will be able to deal with it more intelligently.

We are having better treatment today than ever before in the world's history in this particular line; but to my mind we are far from the real secret which will give us the means of curing this disease. It is something more than a local disease; but whether it is a disease that is easily communicable from one person to another by infection or by inoculation is still a mooted question. I am very glad that the essayist said something about this question of infection or inoculation, as it will cause us to notice a little more in the future whether this disease is readily communicated from one member of the family to another or not. But how can we cure pyorrhea? That is the question. Are we attempting cures that ought not to be attempted? I am glad he threw out a suggestion on that line, thinking, perhaps, we were trying to save teeth that ought not to be saved for the general health of the patient. Many times we are so one-sided in our thoughts that we can only see a part of the disease or the particular disease we are treating, and we forget that this disease has any relation to any other part of the body, and in this way our treatment is one-sided, and we attempt too much. The question arises, Have these few teeth that are involved by pyorrhea any great bearing upon the general health of the patient? So these interrogatories he mentioned are of value to us. We should think of them, and see whether or not there is anything in them.

DR. ELLIOTT R. CARPENTER:

Dr. Davis' paper can be summed up in two bristling interrogations, neither of which I personally feel competent to defend one way or the other, as to whether the disease is hereditary or not. I believe, however, from my own personal experience, it is hereditary. I believe in the early stages pyorrhea is amenable to systemic treatment, and otherwise. I have had one thing brought to my notice through mechanical manipulations in the last few years, although I have never spoken of it before because I have been trying to figure it out.

I have taken cases of pyorrhea with deposits on the teeth, and used surgical measures, so to speak, in removing the deposits. I have taken great pains in removing serumal calculi, and have found in four-fifths of the cases, after I thought I had scaled and removed all particles of deposits from the roots of the teeth, that by inserting a thin, narrow chisel through the gingival space on the proximal sides of the root, I could detect more deposits. I have been trying to figure out in my own mind whether the blood vessels are larger at the upper point of the peridental membrane (I do not know how to express it anatomically), and that there is a greater tendency for the serum to exude from the vessels. I do not know. But if you have thoroughly scaled a set of teeth and taken a thin chisel and run it directly through at that point on both sides, in nine cases out of ten there will be no serumal tartar. I speak of this because of my own experience in the last few years; I have said nothing of it before, because I have been trying to figure it out.

I think Dr. Davis' paper will be the means of setting us to thinking, and possibly looking over our own records.

DR. J. E. HINKINS:

The subject of pyorrhea is of great importance to us all. Every general practitioner, as well as specialist and porcelain worker, has to combat this trouble. I have been through instrumentation, constitutional and local medication, etc., and since Dr. Davis read his paper it has set me thinking a little. On my wife's side of the family there were nine children, and in that family it would seem as if pyorrhea was communicated. In my own family there is no trace of it, because I lived on hard tack during the war, and did not have enough good things to create indigestion. Fortunately for my wife, she has no signs of the disease. But all the rest of the family, even the youngest sister, who is now thirty, have lost teeth from pyorrhea, and this predisposition came from the mother, not from the father, because he had no traces of it. Having at one time studied medicine for a while, I thought when I first entered upon the field of dentistry that pyorrhea was a constitutional disease, and that constitutional treatment was the thing. I tried constitutional treatment, but patients began to lose their teeth just the same. Then, I think, Dr. Pruyn hauled me over the coals, and said that my instrumentation was not good. When the invincible Younger came here, I watched him for a

while and sent him a few patients, but after a while I did not think he was any more successful in treating my cases of pyorrhea than I was, so I was in a dilemma. Being associated with Dr. Cook in his bug shop, I began to think that everything was due to a bug, and commenced using local applications in the treatment of pyorrhea for the purpose of killing these bugs. The more I used local applications, the worse the cases became. Then I got to using splints, after thoroughly cleansing the teeth, and I can say that I do not think I have prescribed for a case of pyorrhea constitutionally in five years. I have been better satisfied with the results I have obtained by using splints of some kind, particularly celluloid, than with any other form of treatment. I can put these splints on and hold the teeth firmly with them. If they are too loose, I ligate the teeth, and then clean thoroughly, remove ligatures, adjust the rubber dam, ligate the teeth again to hold them in position, apply the celluloid around each tooth and let it set. I use the same scaler that Dr. Carpenter referred to. I think sometimes we have too many scalers. First, I used one and then another in removing deposits. I have had better results in treating pyorrhea after I have thoroughly cleaned the teeth and put on some kind of a splint, so that the teeth can not move.

As to whether the disease is hereditary or communicable, I do not know, and I am not going to worry my head about it. I am going to leave that matter to the young men, Dr. Cook and Dr. Tenney, and I am going to do the best I can for the cases that present themselves.

DR. L. S. TENNEY:

I did not expect to say anything on this subject. While it is one that interests all of us, there must be more or less conjecture about it, as no one can speak with authority upon pyorrhea. If we were to discuss the whole subject of pyorrhea we could do so endlessly; but we must be limited in our remarks, because the essayist only asked questions, and I do not believe any one here can answer them intelligently. I once heard a dentist of this city make this remark: We can take a tooth lost from pyorrhea, put it in a vise, and have great difficulty in removing the deposits from that tooth with the strongest chisel we have. If such is the case, what must be the difficulty presented in removing deposits, with our instruments, from teeth in the mouths of patients? So I feel the difficulty in instrumentation is

the greatest obstacle we have to contend with in the treatment of pyorrhea.

DR. GEORGE W. COOK:

The subject of pyorrhea is one of my dreams, and sometimes it is rather horrifying. Dr. Davis in his paper has alluded to two things to which I have given a great deal of thought, that is, the constitutional and the inheritance of the disease. It seems, as a matter of fact, with our present knowledge of the sciences of bacteriology, pathology and physiology, we have come practically to two conclusions with reference to disease of any description, regardless of whether it is simply a local condition, or whether it involves the constitution of the individual or not. The first is, that it is pretty generally conceded that no one inherits a disease, in the stricter sense of the word; that we inherit only a predisposition to a disease. We seem to inherit certain tendencies toward certain diseases. For instance, we find that tuberculosis is a disease that is acquired. It was only a few years since physicians spoke of it as a constitutional disease, that people inherited tuberculosis. But now it is thought that they simply inherit a tendency or predisposition to the disease, or they are susceptible to it. There are degrees of this inheritance. We know from the investigations of Roux, Yersin, and others, who have made a life study of certain infectious diseases, they have fully established in their minds that there are degrees of inheritance of susceptibility or of predisposition, and that predisposition to a certain disease may be acquired. We may not inherit any tendencies to a disease. We may inherit practical immunity, but owing to living a certain kind of a life we acquire a predisposition and sometimes a susceptibility to disease. That is true in pneumonia, which is probably one of the most acute forms of infection of which we acquire a predisposition. One may be extremely susceptible to pneumonia under certain conditions and under certain modes of living. For instance, a man who indulges freely in the use of alcoholics is more susceptible to pneumonia than is the man who is not addicted to the use of alcohol in any form. That has been proven by the use of alcohol given to animals, then subjecting them to certain environments and certain conditions, eventually subjecting them to infections. If they were put in communication, as it were, with other animals suffering from disease, they would contract that disease under certain conditions. There is no question

but what we have certain constitutional conditions and local conditions which predispose the teeth to this disease or render them susceptible to it. There may be a tendency in the tissues to disease, but owing to the mechanical arrangement of the teeth we may inherit it, and consequently the conditions are inherited. We know that certain mouths, jaws and teeth of people have more or less the characteristics of their ancestors, and that if such a condition and arrangement of teeth exist in the offspring as existed in the father and mother, we will certainly have the mechanical conditions whereby they inherit this predisposition. The subject has resolved itself in my mind to a biological study. The disease may be due to certain environments, to the occlusion of the teeth, to the arrangement of the teeth, to irregularities, to the arrangement of the gum tissue in the interproximal spaces, and to various other things which may involve the entire oral cavity. There may be a susceptibility of the tissue itself in that particular locality to a special kind of infection. If there is anything in the science of bacteriology, this is one of the conditions that is to my mind most assuredly a bacteriological disease. We lose sight of a lot of things in the discussion of this subject, and among them the environments of the organism that produce a disease.

There is another fundamental principle which should not be forgotten. We have caries of the teeth on one side of the mouth or in particular localities, while on the other we have immunity to the disease, simply because of certain environmental conditions in which the organisms are permitted to exist in that particular locality, and also the environment of the substances upon which they act, all of which influence the progress of the disease located in that particular mouth, and it does not wholly confine itself to the oral cavity, but to other parts of the body. We know that the diphtheria germ is frequently found in the oral cavity of many individuals who have never had this disease, who are entirely immune to it apparently. But there are certain conditions in which the fluids of the mouth may act upon the organisms that live there in a way, and the tissues may become susceptible to their action and immediately deposits take place on certain parts of the mucous membrane, and there then begins a local action. And what is the result of this local action? The diphtheria germ does not go any further; but while it is acting upon that tissue it produces an intracellular toxin of its own which in turn produces

certain constitutional conditions in that individual which cause certain nervous symptoms, as, for instance, loss of reflexes of the knees, and reflexes in other parts of the body. We find children years after an attack of this disease suffering from certain nervous conditions, and in many instances their physicians are not aware of the true cause. And it is so with pyorrhea.

There is one feature of this paper that impressed me very forcibly, namely, the author's observations. They are of great value from a clinical standpoint.

With reference to the treatment, we can not cure any of these diseases that do not run a special course and produce in the body certain conditions by which disease is arrested by the formation of certain anti-bodies or antitoxins. But they exist there as an anti-substance of some description, which prevents the action of these organisms or arrests their possibilities of reaching or exerting certain influences on the body. You may treat pyorrhea, tuberculosis, or any condition, and what is the result? If the same conditions exist in the individual, in his teeth or tissues, as existed previously to the onset of disease, it will certainly return to that condition. It can not help it, because it is a disease that runs its course in the tissue to which the organism has become habitually adapted to the action of that particular kind of tissue, just as the hoofs of sheep become diseased in pastures; it is truly a local disease, and they lose their hoofs, and after the loss of them the sheep have certain forms of stomatitis as individuals do. It is because the organism lives in a particular kind of tissue until it destroys the life of that tissue, and then it seems to become more diffusible over the rest of the body. It is known that the tubercle bacillus will live in the lymphatic system altogether; we know it will live there for almost the lifetime of the individual without producing any lesions elsewhere, because it has become habituated to the lymphatic system, and when it is removed into other tissues, the other parts of the body may be almost immune to it, and that is the case in the infection of pyorrhea. We have a special kind of tissue; we have two special kinds of tissue, we may say, the tissues of the roots of the teeth, and the tissues of the peridental membrane. The remark made by Dr. Carpenter with reference to the dilatation of the blood vessels in these particular parts is true. I have made many, many slides from tissue taken from all

parts of the mouth in which pyorrhea existed, and I have found that the arterioles became very much distended, and then by a process of osmosis the force behind carries the serum. It simply filters through the wall, or the vessels become dilated and distended, and we have a characteristic condition from the pathologic changes that take place in other parts of the body, that is, dilatation of the blood vessels, with the exudation of the substances from these blood vessels such as serum, corpuseles of the blood, and sometimes they are not dilated to the extent that we would suppose, and we have a wandering out of the cells of the blood. But we have a filtering out of the serum which deposits itself upon a negative substance, and the blood vessels become distended. As soon as the blood has been let out of the engorged vessels they contract, and they may be held in contraction sufficiently long to return to their normal condition; and then we have the beneficial effects for a time—perhaps permanent beneficial effects—if the constitutional conditions are sufficient to render immunity to that tissue for a long period of time.

DR. J. G. REID:

Dr. Cook has gone over the subject so thoroughly that he has not left much chance to say anything. I know that pyorrhea is a distressing disease. Dr. Davis has seen so many cases of this disease that he believes it is on the increase. Statistics can be gathered upon any subject and made to look remarkable, but when we get down to a study of statistics, we can do almost anything we want. I am not prepared to say that pyorrhea is on the increase. We see a great many more cases possibly; that is, we recognize the condition more than we did a number of years ago, but whether there are any more cases of it than there were twenty-five years ago, I would not care to express myself. I believe, however, that until the dental profession settles down and determines the etiology of pyorrhea, we will talk about it for a hundred years from now, and we will know no more about it until we have actually established the cause of this disease. We are not familiar with its etiology. There are many things brought up as causes of pyorrhea, but I think we are all at sea, and until we have established positively the cause of the disease, we will never be any further advanced in its treatment than we are today. We know we cure pyorrhea in some cases, while in many others we fail. I have cured cases of pyorrhea simply by cleanliness, and by no other method,

without either local or constitutional medication. Many of the cases that have been cured have shown no evidence of return of the disease. There are many others that have not been cured, although they have been treated both locally and constitutionally, and I will say that many of the cases might have been cured had the patients followed the instructions of their dentists in the care of the teeth after they had done their duty. That is where the chief success has been in those cases I have cured. As I have said, many of the other cases would have been cured had the same instructions been followed.

As to whether pyorrhea is an infection, it seems to me if we have a lateral incisor or a cuspid tooth wobbling around, and a bi-buspid tooth next to it in perfect health, it would seem, if it were an infectious disease, as if the other tooth would be infected, as they are all under the same environment.

DR. COOK :

We do not find that in other tissues of the body. We find a disease that is particularly infectious, and yet the neighborhood about it is free from infection. Let us take a tubercular gland as an example. The gland next to it may be perfectly healthy, and yet this gland will go on to suppuration in the course of eighteen months to possibly five years, while the adjacent gland never becomes infected.

DR. REID :

That does not necessarily follow that the disease would be infectious, to my mind.

DR. COOK :

One gland is infected because we can find the germ that produces the disease there.

DR. REID :

Theoretically, that seems to be so, but clinically and practically it is refuted.

DR. COOK :

No, sir ; it is not refuted.

DR. REID :

It is, to my mind.

DR. COOK :

It may be to your mind, but the men who work at this know better.

DR. REID:

I wish I knew more about pyorrhea; I wish I knew how to take care of it when it comes into my hands.

From my observations, I should not say that the disease is inherited, or that it is communicable from the mother to the child. Up to the present time I do not recall having seen that, and maybe I will pay a little more attention to that feature in the future to see whether it is true or not. It may occur, but I do not remember seeing pyorrhea in the mouths of patients under eighteen years of age, and it is only after the accumulation of deposits about the teeth that I begin to see that sort of thing.

The etiology of pyorrhea is so obscure that I can not believe we are making much progress in that respect at the present time, and until the etiology is definitely known and conclusively proven, we are not going to make very great progress.

DR. C. N. JOHNSON:

The question raised by Dr. Davis is whether pyorrhea is becoming more prevalent than formerly, and his statistics go to prove from his point of view that it is. From my early experience in dental practice before I came to Chicago, it seems to be that there is more pyorrhea today than ever, but Dr. Pruyn may be correct when he says that we are more observant, more discriminating today in our examinations of these people and, therefore, find the disease more frequently than formerly. I remember very distinctly in my early days when I read about pyorrhea, I could not recognize it, although some of my patients had loosening of the teeth and were losing them when there was no caries. We must go back to the etiology of the disease, and I think the teeth of some of my patients have been loosened and lost from different causes, although we call it pyorrhea. There are many teeth lost in the mouths of patients that never decay—teeth that are lost from some disease which is not true pyorrhea, because we find in many of these instances in which the teeth are lost there is no discharge around them whatever, and even no deposits on them. There are no pockets to be seen. In these cases it would seem as if there was some process of absorption taking place without the formation of any pus, and we can not call these cases pyorrhea when there is no pus. There are undoubtedly many different diseases which lead to loss of the

teeth, and what is needed is a better classification than we have had in the past.

In connection with the subject as to whether a certain disease is becoming more prevalent than formerly, not long since I had a conversation with a prominent surgeon regarding the prevalence of appendicitis, and I said to him, Why is it we have so much appendicitis today as compared with former years? He said that we did not know anything about it a few years ago, although he thought that appendicitis was just as prevalent formerly as it is today, in proportion to the population, and that patients lost their lives from it, but it was called something else. Physicians did not know what it was, and he enumerated some of the diseases from which patients were supposed to have died in those days, but the deaths were undoubtedly due to appendicitis. And it is the same with pyorrhea, I believe. And yet the number of cases may be on the increase. Dr. Hinkins has told us that he lived on hard tack and had no pyorrhea, inferring that a less simple mode of living tends to the development of pyorrhea.

As to the advisability of retaining loose teeth in the mouth, I sometimes think we have tried to save teeth too long. I have made serious mistakes along that line, and we have not always considered that which was beneficial to the patient. I had a lesson in this respect given me in my office last week. I have had a gentleman under my care for some time who had a marked tendency to loosening of the teeth. His lower incisors became involved and I ligated them, using wires. I held them until he finally came in one day with one of the centrals coming through the wire. The other was loose, and I took them out. I put a band around the lateral incisors on either side, attached artificial centrals, as a temporary expedient, and cemented it in. He has been wearing that for a year or two with comfort. The patient came to my office this week and said that these were the best teeth he had and that I should have done this for him before. I thought I received a good lesson. We sometimes do not consider the viewpoint of the patient enough, and the best service we can do to humanity is to do that thing that will give a patient the most comfort for the longest possible time.

In regard to the question of whether the disease is a constitutional or local one, in some cases it would seem that the disease is

purely local, for we can take a set of teeth and after cleaning them the discharge passes away, the gums clear up, and the teeth tighten. There are other manifestations which would seem to point to a constitutional relation. Some ten or fifteen years ago I had a young lady school teacher under my charge. Dr. Cook made a good point when he said the position of the teeth had a good deal to do with it. Her lower incisors were very irregular, and lapped. All over her mouth there were manifestations of pyorrhea. The case seemed to be very discouraging, so far as treatment was concerned. I took out one lower incisor that lapped over, and with a ligature brought the adjacent incisors together so that there was no space left. That showed how far the disease had advanced in her mouth. She stopped teaching school; underwent a serious operation for the removal of an extensive tumor; then she did not have much care given to the teeth for a long time, and that is probably why they did better. In any event, when she came back to me recently, her mouth showed that it is better today than it ever was before, and although there were deposits on the teeth the teeth were tight. I did not find a particle of pus in her mouth. I feel positive that there is some constitutional effect in influencing this disease.

Dr. Cook mentioned the fact that this was an infectious disease. If it is an infectious disease we must have something aside from the mere infection. We must have the tissues in such a state that they take on that particular kind of infection. Aside from the implantation of the micro-organism, we must have the patient or tissues in a susceptible condition to receive the germ or the disease will not develop. Those are the points we want to study more thoroughly than we have in the past. Dr. Reid has said that we are in utter darkness as regards the etiology of this disease, and that we can not expect to work cures unless we understand the cause. I want to say, after all, it is nature that works the cure rather than the dentist, and the only thing he can do is to aid nature in that effort.

DR. TRUMAN W. BROPHY:

Caries of the teeth is a disease of childhood and early manhood, and teeth are lost later in life from other causes, chief among which is the disease under consideration. Disease is a departure from the normal standard; while a remedy is an agent that will restore

the part to the normal condition. When we recognize a disease we naturally, from a medical standpoint, inquire into its cause, because the old principle in medicine, which will last perhaps to the end of time, is that when a part is in a diseased state we must seek for the cause and remove it in order to restore the part to health.

I am one of those who do not believe that there is anything profoundly mysterious concerning this inflammatory condition about the teeth and the alveolar processes. I have never been able to see anything mysterious about it, or difficult to recognize, because we have the counterpart of this affection elsewhere in the body, and we know that these conditions are amenable to successful treatment. I believe that the average dentist who considers this subject we are now discussing fails to recognize one of the important laws of nature. We do not keep in mind the provisions of nature in handling the body, and effecting the changes which come as we advance in years.

One of the speakers has truly said that pyorrhea alveolaris is not present in early youth. This is quite true.

Pyorrhea is a bad name, as it does not express anything except the flowing of pus, although it has become so intimately associated with this particular condition and is known by the laity as such, that we will have to let it go, because we can not help ourselves. Professor Senn has suggested a name that is in accord with the nomenclature of other morbid conditions of the body, and it indicates where the disease is and what it is, but does not attempt in its definition to define all of its peculiarities. The term he suggests is purely and simply alveolitis, which implies an inflammation of the alveolar process. We must qualify even that by saying "dental alveolitis." It may terminate by resolution or pass on to the formation of pus. I do not think it is to be defined by a single word. However, it should be adapted to the exclusion of all other names which have loaded the condition down and confused students, so that much time has been consumed in learning the different names or synonyms. Inflammation about the teeth, no doubt, always existed there. Someone remarked about Etruscan dentistry, and the bridges that were put in to retain teeth lost by this disease.

Dr. Johnson spoke of loosening of the teeth. Every dentist has done exactly as he has done in trying to save teeth of patients.

The treatment of pyorrhea alveolaris should be settled in a certain way by the condition of the part when we see it. It does not reside within the power of man to reproduce alveolar processes, and when the alveolar process is lost to an extent which will take away two-thirds or three-quarters of its structure, leaving the apex of the tooth only in a little pit or very small socket, what is the use in spending time in trying to retain in the mouth such a tooth? There is no use in ligating or trying to inject something in there that will stop the further destruction because the tooth is already lost. The dentist who will remove those teeth and do something else will be doing his patient the best service; but if the bone is not more than one-half gone, so that the tooth has half of its socket left, we may then adjust bands. There is an old principle in surgery that when a part is in an abnormal state we should put it at rest, and to put the teeth at rest we must adjust some splints to hold the teeth in quietude, and, after removing the deposits, stimulate the parts and keep them clean, then the parts will get well. I do not think there is anything mysterious about that. The mystery is lack of observation of the laws of nature, and the attempt to preserve teeth that are already gone. Any dentist will fail if he undertakes to do that.

If the teeth are becoming loose then an effort should be made to make them firm; they should be held in place long enough by some means for the tissues to get well. Take away the deposit and the teeth will get well, unless the patient is run down physically, unless we have to contend with some general systemic disturbance or low state of vitality, resulting from syphilis, from phosphorus, lead, or malarial poisoning. There may be a low state of health from inactivity of the stomach, bowels and liver. All these are factors which should be considered. Systemic treatment will put the patient in as good condition as possible, and then we may treat the local condition in almost all cases with a reasonable assurance of effecting a cure.

DR. E. J. PERRY:

I do not know anything about pyorrhea alveolaris, excepting that I clean deposits from the teeth and produce the best results I can for the patient. Sometimes the teeth tighten up and sometimes they get loose. I believe there is a disease known as calcic

inflammation, which is caused by deposits of salivary calculus, and when that salivary calculus is removed, the presence of which excites inflammation of the gums and gingival margins, the disease gets well. But I have not been able to cure those cases in which the calcic inflammation has extended deeply into the socket, with the external plate gone and the apex of the root exposed, or perhaps the two roots are exposed. When I have taken teeth out of the mouth, put them in a vise and found that I could not remove the deposits from them with a hammer and chisel, I concluded that some of the men who said they could thoroughly clean these teeth and tighten them were mistaken. They did not remove the serumal deposits from the roots of teeth; they thought they did, but they didn't. It has been my theory for a long time that the successful treatment of pyorrhea alveolaris is just in the ratio that I am perfect in my instrumentation, and as I am never perfect in it, I may say to you frankly that I never cure the disease. I mean now pyorrhea alveolaris; I am not talking about calcic inflammation. I mean what Dr. Black frequently calls phagedenic pericementitis.

I lost a patient for quite a while, as I told her that I could not cure pyorrhea alveolaris. She went to a young dentist and the other day she came back to have a tooth filled. I looked at the pyorrhea, although I did not know that she had been to another dentist, and made the remark to her that her pyorrhea was no worse than it was a year ago. She said, "Yes, it is worse again. I have a great deal of pain in that tooth; but it was treated by a dentist who said he could cure it." The tooth was in as bad condition as it ever was.

As I have previously said I can not cure it. I can ameliorate the condition for a number of years, but I can not cure it. That is about as far as I have gone in the treatment of pyorrhea alveolaris. I am not worrying about the etiology of it. I will let the scientific gentlemen work that out. It will come in time, and when it does come the treatment will be the same.

DR. EDMUND NOYES:

I am very much in sympathy with what has been said about the difficulty of instrumentation in some conditions of pyorrhea alveolaris, especially as regards the molar teeth and the space in the bifurcation of their roots and in deep pockets. I must confess that instrumenta-

tion is to me an exceedingly worrying problem in these cases. However, I have had the misfortune to extract teeth that have been under treatment some time, in which extraction showed that the tartar of every sort had all been removed, and I have had to extract others from which inspection showed that the serumal tartar had not all been removed. I am convinced clinically, taking into account the great difficulty that I have in perfectly removing tartar, that a good many of these cases get well and keep well a good while, though every particle of tartar has not been removed.

In regard to the retention of these teeth longer than we ought to, I suspect that almost all of us are guilty of that. I have kept teeth in the mouths of patients that would better have been removed. A good deal depends on one's judgment as to the hopefulness of the case, and particularly upon his experience in treatment. If I can see a tooth having pyorrhea get well and remain so for a considerable period, and then the disease recurs, if subsequent treatment cures it again, and it will remain well for considerable period of time, I do not give up such a tooth. And in the case of teeth in the front part of the mouth that are very loose, the retention of them depends upon my judgment as to whether they will get well by being kept still. I have seen a good many cases of rather astonishing recoveries after rigid support by a splint, and I have had the best success with a gold splint upon the lingual side near the tops of the teeth, usually fastening it with pins, which may or may not go down into the pulp canals.

Something has been said in regard to the judgment of such cases depending upon whether one is able to make a permanent operation or not. I do not place so much emphasis upon the word permanent in a good many of my cases, as some people have seemed to do. For instance, if the row of six anterior lower teeth can be kept in comfort and in a reasonable degree of health by frequent treatment, and a carefully made splint, as I have described, for two or three years, it is worth doing. A great many of my patients would rather have such treatment to preserve these teeth even for a couple of years than to sacrifice them immediately. If you can keep them in comfort for a year or two years' time you never can tell how much longer they may remain in that condition. It may turn out to be ten fifteen years, you can not tell beforehand which it will be. The certainty of permanence in a good many things we do is not the most important

consideration in regard to it. It is something we can not absolutely promise. We ought to do many things for our patients with the understanding that there is uncertainty both as to the immediate outcome and final durability.

DR. ISAAC A. FREEMAN:

The paper read by Dr. Davis was both interesting and suggestive, and I feel like complimenting him on the suggestions that were made in the form of interrogations. Those of you who attended the lectures of Dr. James Adams Allen, at Rush Medical College, will remember very well his statement with reference to the treatment of a case. He used to say, "It depends very largely, if not entirely, upon what is the matter with the patient—what is the condition." Dr. Brophy has hit upon that. He also said that many times an abscess was caused by a slight injury, and that the results of that abscess often were brought about by the process of nature in effecting a cure. For instance, in the case of a slight injury the properties of repair were sent into the part through the circulation, and as the demand was made upon the system, there was often too much material thrown into the part, and it passed out into the interspaces through the arterioles, and as it was not used, it lay there hardened and contracted, and in the contraction a small part of the tissue was cut off from the circulation and death of the minute part so strangulated occurred, and suppuration resulted.

Speaking of the etiology of pyorrhea alveolaris, may it not arise from varied causes? We know that in a great many instances injury to tissue causes an inflammation which lasts for a few days, and it may be that this inflammation in causing a more highly vascular condition of the tissues of the part we have set up there a process that results in abscess. If we have a condition that results in a flow of material to the part more than is necessary it may promote pyorrhea. Then, we have peculiarities of secretion. I find in my practices that in a patient whose oral secretions are thick and ropy, and not changed rapidly, there is a much greater accumulation of lime deposits about the necks of the teeth, and after these deposits are removed, there is a rapid recurrence of them, so that removal of the deposits alone will not cure the condition. After thorough removal of the deposits from the necks of the teeth, with a change of environment or a change in the mode of living, together with systemic medication, bringing

about a more healthy condition of the general system, a cure may be effected for a time, at least, until there is again change of habit or a change in the mode of living which brings about a similar condition with greater deposits of a serumal nature, or other concretions of lime. Lack of care has much to do with these accumulations about the teeth, and I believe one of the greatest agencies today in the treatment of pyorrhea alveolaris is the promotion of prophylaxis on the part of the patient. Therefore, we find various mouth washes recommended that are very helpful in the treatment of such a condition. I recall one lady patient for whom some ten years ago I removed tartar from her teeth continually and tried to save the teeth and prevent wasting of the alveolar process. Those purple points about the festoons of the gum would be pushed up almost in a day, the gums being very painful and sore. I stimulated her to take hold and care for her teeth. She is a woman of fifty years of age, and since she has been caring for her mouth properly her teeth are free from any such deposits, and free from pyorrhea.

I would like to say a word or two in regard to what has been said concerning the saving of loose teeth. I think we must decide what we will do to such teeth when we see and know the condition they are in. I know that I have saved teeth for many years that would have been lost long ago if I had not done anything to them. One gentleman, suffering from pyorrhea, comes to my office two or three times a month, the teeth in the lower part of his mouth being supported by a splint. I pushed those teeth back into the arch, as they were spreading out in the shape of a fan, and held them there, and they are healthy. There is no decay, so far as I can determine. It seems to me there is no other way to do for such teeth than to remove the tartar and use splints to support them. Conditions will govern, however.

DR. L. P. HASKELL:

Some ten years ago, while I was in San Francisco, I called upon Dr. Younger. He called me to his operating room to show me a lady patient who years previously had consulted another dentist on account of pyorrhea. Three upper molars were very loose. This dentist told her it was utterly useless to undertake to save those teeth. They were so loose that he could pick them out with his fingers. She had heard that Dr. Younger could treat such cases successfully, but this dentist said to her, "Madam, neither Dr. Younger nor the Lord

Almighty can save these teeth, as they are beyond saving." I was surprised to see how firm they were, and also how well the gum margins had been restored. It was an eye-opener to me, because I had been interested in this subject for many years, and knew it was a difficult disease to treat, but did not know that any dentist was successful in the treatment of it in an extreme case like that. Two years later, when Dr. Younger came to Chicago, I had the opportunity of seeing a good deal of his work. He was one of those men who never hesitated to invite dentists to see him operate in his specialty.

Quite a number of years ago I heard a dentist make the remark that seventy-five per cent of his patients were affected with pyorrhea alveolaris, more or less.

DR. J. H. WOOLLEY:

I am of the opinion from the little experience I have had with pyorrhea that the X-ray plays an important part in discovering the cause of this disease condition. I am not given to boasting, but the X-ray played an important part in the discovery of the cause of a neuralgia that had been troubling a patient for six weeks. She had neuralgia of the facial nerve apparently, extending into the ramus, into the neck, and auditory passages. She had lost her husband and was in a nervous condition. She was told by a nerve specialist that the cause of the pain was nervousness, and it would soon pass away. My attention was called to the use of the X-ray by Dr. Keefe, who has beautiful specimens or plates showing the causes of alveolitis and of pyorrhea as revealed by the X-ray. In this case the X-ray revealed ossification of the pulps of the first molar, first or second bicuspid. I found near the end of the root of the first bicuspid in the upper jaw two pockets which I discovered in drilling through the jaw for pus. I medicated the part with sulphophenic acid, and the next day the woman was relieved. I treated that tooth, as well as the second bicuspid and molar, and filled the roots. The case was cured. The X-ray revealed the condition of affairs. The X-ray plays an important part in the detection of the causes of disease. In some cases exostoses are revealed by it. I would offer the suggestion that we use the X-ray more, as I believe we will find it of considerable aid in the treatment of pyorrhea.

DR. DAVIS (closing the discussion):

In my paper I did not discuss medicine, methods or anything

else in regard to the cure of pyorrhea, so whatever has been said has been foreign to the subject. My paper simply dealt with conditions, and what should be done in those conditions. What are the conditions that will enable the operator to decide what to do in a given case? We know that we retain teeth by the use of splints. We have to do it all the time; but why do we do it? Have any of you ever considered the fact that by retaining teeth you may be communicating that disease to the children in the family, and that it were better to have such teeth removed if they are in bad condition, without respect to the condition of the patient? Think what it will do to the younger members of that family. That is one of the points I wanted to emphasize. I want to lay stress on the fact that I am not a believer in extreme systemic medication. Only recently, at one of the large clinics held in this city, there was a table clinic where one man had a list of seventeen medicinal agents that he fired into people for various conditions, such as pyorrhea or phagedenic pericementitis, calcic inflammation, ulitis. I used the term in my paper pyorrhea, not pyorrhea alveolaris. Of the members seated around this table there are only two who used the term pyorrhea. We know it is a wrong term. I am not going into the question of the right term to use. I used the term that is most generally and most widely known. The whole paper can be summed up in one particular clause, namely, care and cleanliness of the teeth.

I do not want to combat the hereditary theory of the disease, but simply say it is a predisposing factor, and the remarks made by Dr. Cook bear me out in that particular. The disease is not present in the child except as a predisposing factor. If we allow such teeth in the parent to remain, we increase the liability of the disease in the children in that family. I have seen pyorrhea in children as young as fifteen.

As I mentioned in my paper, my records only cover five years, because beyond that time they are not sufficient to warrant correctness. During the last five years I have kept an absolute record of every case, on what portion of the teeth the deposits were, the age of the patient, and everything connected with the case, and that is what I have presented to you this evening.

CHICAGO DENTAL SOCIETY.

A regular meeting was held April 4, 1905, in the Northwestern University, with the president, Dr. Thos. L. Gilmer, in the chair.

Dr. T. A. Grisamore read a paper entitled "Hypnotics and Anodynes; Their General Application."

DISCUSSION.

DR. ELGIN MAWHINNEY:

Mr. President and Gentlemen—I desire to compliment the doctor on his presentation of this paper, dealing with a subject in which many are not interested, deeming it of little practical value. The paper presents some very excellent thoughts, particularly the combinations of drugs suggested, although I do not see much of advantage in combining morphine and tartar emetic rather than combining opium with ipecac in the form of Dover's powder. I like the diaphoretic effect of the latter better than I do the former, and it is not so harsh on the digestive tract.

I think the need for anodynes is growing less each year as the public begin to appreciate the value of their teeth. There is less suffering in consequence, and we need the anodynes less. However, there is a large number of people who consult the dentist only for the relief of pain, and some who consult him for the relief of pain when it is not due to any neglect on their part. Many cases of incipient alveolar abscess are such that the pain can not be relieved readily by local treatment, and it becomes necessary to administer some of these agents.

There is another place where the hypnotics and anodynes are indicated, not so much for the relief of pain *per se*, but for the purpose of preventing it by fortifying patients to undergo a serious operation. That is the time when we can very happily make use of the suggestions contained in the paper.

I have always felt that the dentist makes a very serious error when he wilfully forces his patient into such a degree of suffering that he loses confidence in dental operations. Many patients would rather let their teeth go than undergo such severe pain; or they will have them extracted and resort to artificial teeth. Many people allow their teeth to go unattended because they dread the pain incident to dental operations. Many times, in very nervous persons and those who suf-

fer greatly even from small causes, we must resort to hypnotics and anodynes if we perform our operations thoroughly. I find that many of these agents are helpful in this regard.

In later years I have not used morphine so much as a fortifier against pain as I have the coal tar derivatives, and the combination containing acetanilid, suggested by Dr. Grisamore, strikes me as a very good one. I have used phenacetin as well as acetanilid with good results. I have quite abandoned the use of morphine for that purpose, although it is a pain reliever *par excellence*.

The essayist did not suggest the value of always giving a good cathartic following the use of any of the opiates. They disturb the whole digestive tract more or less. In giving morphine, I like the plan of impressing the system with one dose, rather than giving small doses repeatedly. I like the opposite plan with the coal tar derivatives, giving small doses repeatedly rather than one large dose.

I think we are to be congratulated in having our attention directed along this line.

DR. CHAS. E. BENTLEY:

I feel indebted to the essayist for the formulæ he has given us, although I do not feel competent to discuss either their worthiness or unworthiness. I am willing to take his word for that.

I wish to enter protest against the practice of giving internal medicines to fortify a patient against pain, incident to dental operations. Some persons possess an idiosyncrasy to morphine and other anodynes that produce conditions more serious than that produced by pain. I happen to be one of them. Morphine retards my secretions; it nauseates me, and almost paralyzes my power of co-ordination. The only time I ever took morphine, it produced a reaction that kept me in bed for four days. Possibly some of the accompanying drugs suggested by Dr. Grisamore might relieve this condition, but what is true of me, is also true of others.

Acetanilid and other coal tar derivatives possibly fortify against pain as well as morphine. It seems to me that the giving of drugs for the purpose of preparing one for pain has but a small place in our practice.

I wish to call your attention to the first and last paragraph of the paper, which drew the attention of the society to the fact that our professional status will be enhanced in proportion as we are able to

impress the laity and the medical profession with our ability to give drugs intelligently. I wish the young men present would not take this statement too literally and run to giving medicines for the relief of any condition they may find in their practice. I am on record in this matter, and my views are decidedly opposed to this practice. According to Jacobi there are only four drugs that are specifics; that are curative—iodid of potassium, quinine, salicylic acid and mercury. Since he made that statement, antitoxin has come into use. The tendency of medicine is to get away from the use of drugs and run on hygiene and serum therapy. Drawing an analogy, I am justified in making the claim that the dentists' field for administering remedies internally must be very small. The point I am trying to emphasize is this: That drugs given to the human organism when it is impaired, further impair the organism in the elimination of poisons, and thereby prevent rather than aid function.

Anything taken into the system that is not a food, must, of necessity, be a poison, and if a drug is given to an impaired organism, it further vitiates that organism.

This is an excellent paper, but I would not become intoxicated too much with the first and last paragraph, and become too profoundly impressed with the thought that the status of our profession is enhanced by our power to give drugs.

DR. J. P. BUCKLEY:

I have only words of commendation for the paper. If I would discuss anything, I would discuss the remarks of Dr. Bentley and tell the young men not to take them too seriously. Our profession is enhanced if we show our patients that we have the ability to use drugs. In consequence our profession will have a higher standing in the community.

There is one thing in connection with this subject that ought to be emphasized, and that is the study of pathology. We can not give drugs internally unless we know the conditions. We should not be too anxious to use hypnotics or anodynes without studying the underlying conditions. Dr. Grisamore referred to neuralgia. Neuralgia is not a disease; it is a manifestation of a disease, and we must look beyond the manifestation to other pathological conditions. If the neuralgia is the result of anemia, we should not give morphine. The patient must take something that will build up the system. We can give

that patient an elixir of iron, quinine and strychnine or some systemic tonic, and build up his system. If the neuralgia is of syphilitic origin, it is our business to find out the trouble and have the patient take potassium iodid, one of Dr. Bentley's specifics for a specific disease. If the neuralgia is due to a rheumatic or gouty diathesis, then we give medicines to correct this condition. If the neuralgia is of malarial origin, then give quinine.

I want to congratulate the essayist again in bringing this subject to our notice, and desire to emphasize two drugs particularly. If you want to produce sleep, give chloral hydrate or butyl chloral hydrate; if you want to stop pain, give morphine.

Dr. MaWhinney spoke of fortifying the patient. The drug that is especially indicated when the nervousness of the patient comes from fear or dread is potassium bromide, masking its taste with some elixir or syrup as simple elixir or compound syrup of sarsaparilla.

DR. CHAS. E. BENTLEY:

I think that it is an unsafe and, perhaps, an unwise recommendation to make the statement made by Dr. Buckley. If I understand him correctly, he advises the dentist to give mercury and potassium iodid if his patient is suffering from syphilis, and iron, if his system needs toning up.

Does it not occur to you that such advice will be far reaching, and is inclined to do harm unless it is controverted? If my patient is suffering from syphilis or any other disease, I want him to be treated by a physician. It is our high province, as specialists, to do the greatest amount of service to our patients by taking them to a physician who knows a great deal better how to treat disease than we do. That is the point I wish to emphasize. Whenever such cases come to the dentist they should be referred to a physician.

DR. J. P. BUCKLEY:

I meant to say that when a patient comes to me for treatment suffering from neuralgia of dental origin, and after studying the conditions I come to the conclusion that back of that neuralgia there is anemia or syphilis or rheumatism or malaria, then I would not hesitate to give the particular remedy that is indicated.

DR. GEO. W. COOK:

The question as to whether dentists should medicate internally has always been a warm one for discussion. Of course, when you are

not familiar with a drug, it is better not to give it. Dr. Bentley said that there are only four specifics. Some gentleman said that there are only two; quinine to cure malaria, and sulphur to cure the itch.

The prescriptions offered by the essayist are very good and useful in the cases mentioned. As Dr. Buckley said, this question goes back to pathology, after all. Water is good when you know how to use it, but when you get in over your head, you will drown. It is a question of knowledge of the conditions for which you administer these things.

DR. GEO. B. PERRY:

I agree with Drs. Buckley and MaWhinney in the treatment of conditions which are easily diagnosed as being of dental origin. I do not agree with Dr. MaWhinney with regard to his dosage of morphine. Morphine is such a peculiar drug that the temperamental conditions of the patient should be considered before the drug is administered. In some cases one-eighth of a grain will have as much effect as one-half a grain on another patient. It is better to use a smaller dose and give it more frequently than to give one large dose. I speak from personal experience with morphine, as did Dr. Bentley.

The combination of phenacetin, spoken of Dr. Grisamore, I have not used. I use $2\frac{1}{2}$ grains each of phenacetin and salol, which gives me an antipyretic and an anodyne. I have given potassium bromide, as suggested by Dr. Buckley, for a number of years; but I prefer the sodium bromide because it does not irritate the gastrointestinal tract as much as does the potassium salt.

DR. GRISAMORE (closing the discussion):

I do not believe Dr. Bentley meant to leave the impression he did with regard to morphine and its uses, since only a few moments ago he was speaking to me with regard to a case in which he prescribed morphia only today. Judging from his discussion he condemns morphia (in fact most all drugs) and condemns it because he has an idiosyncrasy for this drug.

I would not advise the administration of this drug to any individual in which it would produce the same chain of symptoms it does with the doctor, but fortunately those cases are very rare, certainly not frequent enough to warrant abandoning the use of the drug entirely. Should we bar the use of all drugs for which individ-

uals have idiosyncrasy we would be compelled to take at least one of the three curative drugs of which the doctor thinks all important, since a great many people can not take quinine under any circumstance.

Dr. Bentley laid the most stress upon his warning to beware of the last paragraph. He seemed to feel that I thought the dental profession would advance in proportion as they learned therapeutics; I said that was one line of advancement and I believe that all will agree that it is. Your patients will have more confidence in you, if you can write a prescription intelligently; they will think more of your ability as a dentist—if when the case demands you administer systemic remedies—and I believe more of this class of work should be done by the dentist and less referred to the practitioner of medicine. I thank you.

AMERICAN DENTAL SOCIETY OF EUROPE, GENEVA,
SWITZERLAND, APRIL, 1905.

SATURDAY, APRIL 22ND.

The first paper for this morning was one on "The Question of the Utility or Necessity of the Bacterial Flora in the Human Mouth and Digestive Tract," by Prof. W. D. Miller.

PROFESSOR MILLER

Said that he had obtained the privilege of the President of the Society to change the subject. The paper was one that he intended to publish in full in the columns of the dental journals, and therefore one which the members would have the opportunity of reading at their leisure. The communication he desired to make at the meeting was one that could not be presented in the columns of a dental journal, as it required a great many microscopical slides to illustrate it. Some of the members had expressed disappointment to him that the paper was not to be read, and he would therefore precede his lantern demonstration by giving a synopsis of the paper, so that the members would know what to expect when they came across it in a dental journal later on. It was a fact well established by scientists, and pretty generally acknowledged by all educated people, that there was a very profound correlation or interrelation between certain low forms

of animal life and certain plants, on the one side, and the animal kingdom on the other, and that relation was so profound that it might be said the very existence of the animal kingdom, including man, and of the vegetable kingdom was dependent on the co-existence and activity of the lower forms of vegetable life called bacteria. The animal kingdom, including man, was absolutely dependent upon the vegetable kingdom for its existence; no man or animal could take nourishment out of the earth, but had to get it directly or indirectly through the vegetable kingdom. The vegetable kingdom built itself up by means of simple inorganic compounds like carbonic acid, ammonia, and other simple compounds of nitrogen, obtained from the air, and water from the soil. The amount of carbonic acid and ammonia in the atmosphere was limited and would become exhausted after a certain time if not constantly restored. As soon as the carbonic acid and ammonia became exhausted plant life would disappear from the surface of the earth and it would be a question only of a few weeks before animal life disappeared also. It was at this stage that the bacteria performed their most important role; they decomposed the dead particles of animal and vegetable life, and converted them back again into carbonic acid and ammonia which were necessary for plant life, so that the amount of such substances in the air was continually being renewed, by means of which higher vegetation was made possible. Not only in that general way did bacteria play a most important role in the economy of nature, but in special cases, for instance, there were numbers of different kinds of bacteria in the soil which had the function of fertilizing soil, and it had been proved by experiment that if soil was freed entirely from bacteria, plants would not grow in it, or only grow slightly. Seeds in the majority of cases would not germinate. That fact had been made use of in the Agricultural Department of the United States government, where they had cultivated the particular bacteria of the soil and used them for infecting the soil, or the seed which had to be sown, and they had found that soil so infected produced a crop three, four, five or tenfold as great as neighboring soil that had not been infected. In that discovery there was a means of rejuvenating, so to speak, immense tracts of land which narrow minded farmers had ruined in the course of time by growing one crop after another until the soil was completely impoverished. A great many people went further, and maintained that

not only in the vegetable kingdom but in the animal kingdom and the human body bacteria performed the same beneficent role, especially in the alimentary canal. Certain forms of food must undergo a process of digestion in the stomach before it could be assimilated, and that the process of digestion which was effected by the juices of the stomach could be effected equally well by bacteria. It was therefore maintained that the innumerable bacteria in the abdominal and digestive tract were there for the purpose of assisting in carrying on the processes of digestion. That had been only a theory, but it had received a scientific basis of proof through experiments recently carried on by one of the professors in Germany. He took hens' eggs and hatched them out in sterilized incubators, and fed the chickens on sterilized food. They ate voraciously, but instead of increasing in weight they diminished, and at last died. During the experiments if a little hen's dung was added to the food so that the alimentary tracts of the chickens became infected they immediately revived and grew up to be useful hens. The wife of a famous French professor came to a similar result in experimenting with tadpoles, and the experiments were carried out so carefully that there did not seem to be any possibility of mistake. Nevertheless, although it might be true for chickens and birds, it did not prove that it was true for the whole animal kingdom, and that remained to be seen. Others went still further, and maintained that the bacteria of the mouth were essential to the perfect health of every human being, that they were beneficent organisms, and that humanity could not afford to do without them without injury to health. The theory had been advocated even amongst dentists that antiseptic mouth washes should not be used, and that care should be exercised in the use of the tooth brush, so as not to totally eradicate the mouth organisms. It was a question of enormous interest from the point of view of general hygiene and dental hygiene, and as far as it concerned the mouth it was the duty of the dentists to assist in the solution of that question.

PROFESSOR MILLER

Then proceeded to exhibit a large number of lantern slides, consisting chiefly of preparations illustrative of comparative anatomy and certain pathological processes which took place in human teeth, especially the process of calcification and the formation of pulp stones.

THE PRESIDENT

Thanked Professor Miller for his most interesting lecture, and the thanks of the meeting were also accorded to Mr. Sandos for the loan of the projection apparatus by means of which Professor Miller was able to exhibit his slides.

DR. PAUL GUYE

Also exhibited a series of lantern slides of radiographs taken in relation to the teeth, and the thanks of the meeting were accorded to Dr. Guye for his interesting exhibition.

DR. L. C. BRYAN

Referring to some of the slides exhibited by Professor Miller, said that sulphuric acid was recommended for the canals of teeth and he judged that pulp stones being of the nature of secondary dentine, were not so easily affected by the acid as the normal dentine. The question was whether the sulphuric acid ate away the cells of the canal and loosened the pulp stones, or whether the acid acted on the pulp stones by dissolving them.

PROFESSOR MILLER

Said he could not answer the question without direct experiment, but he imagined the acid not only acted on the pulp stone but on the walls of the cavity, so that the canal was widened chiefly at the expense of the teeth. He had always thought himself that the use of calerin was preferable to hydrochloric acid, which dissolved the dentine more rapidly. Sulphuric acid was not a rapid solvent, as it caused a precipitant of sulphate of lime. Nitric or hydrochloric acid were the best, but he should not use a solution of more than 50 per cent of nitric acid.

DR. W. E. ROYCE

Had been given to understand that as a rule where to the naked eye two teeth seemed to coalesce there was really a membrane between the two teeth. He had often found that the pulp stones that appeared to coalesce with the side of the pulp canal came away with the use of sulphuric acid. Was it not a fact that there was a membrane as a rule between the pulp stone and the wall of the canal?

PROFESSOR MILLER

Said there was only one stage in their existence. There was the pulp stone and the wall of the tooth and by deposit the pulp chamber gradually diminished in size and the wall of the tooth gradually

approached the pulp stone, and at one period there would be a thin membrane between the wall of the tooth and the pulp stone, and subsequently they coalesced. He had had thousands of preparations go through his hands of pulp stones coalescing with the walls of the cavity in the tusks of elephants.

DR. W. MITCHELL

Thought the reason why sulphuric acid was used was owing to its great affinity for water. Wherever pulp stones were found with a trace of membrane between the pulp stone and the wall of the cavity, there was almost invariably some moisture there, and consequently sulphuric acid combining with the water would obliterate or eat up the membrane, and thereby promote a little loosening. By that means pulp stones not in absolute coalescence with the wall of the cavity could be removed. It sometimes took very delicate, careful and long manipulation to remove them. The other acids seemed to be a little bit too strong and were not as nice to handle, owing to the fumes given off, and that was no doubt a reason why they had not been used. There was just as much breaking down of the tissue of the root of the tooth as of the concretion inside, and that was a disadvantage.

DR. E. F. DAY

Was always under the impression that sulphuric acid was used because it was the least irritating to the tissues. He believed sulphuric acid was used in cases of necrosis to dissolve out the dead bone. He was aware, as Professor Miller said, that the acid formed an insoluble salt and that that was a disadvantage, but its action was sufficient to break up the nodular substance in the canal. He had tried hydrochloric acid and found it set up periostitis and led to trouble.

DR. W. HIRSCHFELD

Had hitherto believed that the presence of pulp stones was an exception in dental practice, but after the exhibition of Professor Miller he felt inclined to believe they were more frequent than was realized. He desired to know what percentage of teeth it had taken to collect the slides, so that he might form some idea of the percentage of pulp stones to be met with in practice.

PROFESSOR MILLER

Said he had not collected any statistics on the point, but if he were obliged to make a guess on life or death he should say pulp stones

were found in 75 per cent of teeth. They might be microscopical and do no harm, but he thought they were present in 75 per cent.

DR. G. TERRY

Asked whether Professor Miller had ever observed that pulp stones had any absorbing action on dentine.

PROFESSOR MILLER

Said he had not.

DR. TERRY:

Or any altering of the structure or form of teeth?

PROFESSOR MILLER

Said he had never noticed a process of absorption.

DR. TERRY

Said he saw a case of that kind once and cases of pulp stone where the dentine seemed to have been absorbed away and underneath it was almost all pulp stone.

DR. W. J. YOUNGER

Thought that nitric acid would be far preferable. It had a very strong affinity for limestone and did not set up the violent irritation set up by hydrochloric acid and sulphuric acid. He had used nitric acid a great deal in necrosis of the jaw and always with great success. The great lesson in Professor Miller's remarks was that arsenic should not be used to devitalize the pulp.

DR. W. MITCHELL

Said that in connection with pulp stones he did not think age had anything to do with their formation. The first case of pulp stones he ever saw was in connection with the noneruption of the third lower molars in the mouth of a young girl nineteen years of age. There was a great deal of irritation of the tri-facial nerve and it puzzled him. He studied the case for a long time and finally determined to cut down and remove the third left lower molar which seemed unable to come through. He inferred the trouble was due to pressure on the inferior dental nerve. He split the tooth and found a regular chain of pulp stones almost analagous to frog spawn in appearance, a series of beads running all through the pulp. Three or four months later the same kind of trouble supervened on the opposite side. Therefore he did not think it was necessarily dependent on caries, but upon irritation from some cause, which might be almost anything.

PROFESSOR MILLER

Said it was impossible to draw any conclusions from individual cases, but if it was desired to pick out a case with the certainty of finding a pulp stone an old tooth should be chosen.

A communication on "The Present Status of Preventive Dentistry" was on the program to be read by Dr. L. C. Bryan, but Dr. Bryan obtained the president's permission to cancel the paper and present some diagrams and models of cases in practice. Some of them were old cases and two or three were quite new and illustrated the principle he wanted to demonstrate. The first was the case of an old lady with a bicuspid, molar, and another bicuspid root, the molar being so bad that it was impossible to attach a bridge to the crse. He had attached one on a previous occasion, but the appliance became quite loose, and there was a loosening of the bicuspid. He therefore made a bridge across the mouth by crowning the two bicuspids and extending the bar right across. The bar he had already explained in a previous communication. Another case was that of a gentleman who had a large firm lower jaw with all the teeth in place, but the upper jaw somewhat similar to the last case with one bicuspid on one side. It was impossible to put a bridge on the sound bicuspid, and a bridge on the other side would only give a masticating surface on one side of the mouth. He first put in a bridge with a bar across, leaving just a band round the bicuspid, but that failed by the band pushing up. Then a saddle bridge was made resting on the alveolus, and a porcelain bicuspid secured to the bar. The bridge had been in continuous use now for many years and worked admirably. When it loosened he had to take it out and grind down the surface of the bicuspid and put a crown over it, so that the tension should remain on top. Everyone knew that a bridge attached to one bicuspid would be of no use, but in connection with the strengthening bar across the roof of the mouth, if it were a little away from the hard palate and sunk into the soft tissues on the side, the base of the bridge resting on the gum, it could be managed. The base should be always platinum, as it was very much less liable to accumulate secretions in the mouth than gold. The next case shown was a very bad case of a timid lady with pyorrhea. The central incisors were built up with cement. He insisted on taking out the bicuspids, but she would not submit

to that and he allowed himself to be over-persuaded and put in a bridge. It lasted for some years with the strengthener. At last the bar broke, the whole thing loosened and he had to take it out and make the bar stronger, but in the meantime the teeth had become more or less loose and the case was practically a failure. He thought the bridge would have to be replaced by a plate. It was necessary to be sure of a certain amount of anchorage in such cases. The next case was that of a young woman with all the teeth extracted on one side, posteriorly to the bicuspid, which was rather weak, and her third molar came considerably forward. There was a sufficient cavity in the bicuspid to make a post and he devitalized the bicuspid through the distal surface and made a bridge, of which he showed a model. The bar, instead of going straight across, was carried forward so as to be out of sight when the mouth was opened. The case had been exceedingly satisfactory. He felt there was greater strength in a saddle-bridge, and the longer the saddle the less movement horizontally. There was considerably more loosening with a short saddle bridge than with a long one. The principal point he wanted to bring out was the supply of lower dentures, and he exhibited the case of an old lady whose teeth were not particularly strong, and a saddle bridge was made with one bicuspid and a molar attached to the first bicuspid and cuspid. The bridge had gradually loosened the teeth, and if he were making the case again he should extend the bar around. In conclusion Dr. Bryan mentioned a few of his failures and exhibited cases illustrating them.

DR. W. MITCHELL

Said that where there were long teeth the leverage would be very exacting on the remaining teeth. He had had the best results by not making the occlusion too perfect, making more of a flat surface well roughened, on the principle of the mill-stone, so that the opposing teeth could work laterally without any great amount of leverage. The grinding power was probably not quite as efficient, but the tendency to loosen the teeth or the supports was done away with. His maxim was not to attempt to do too much with such cases in the way of perfect antagonism, but to give the patient a fair grinding surface and the case would last much longer than where there was perfect occlusion.

DR. C. RATHBUN

Said he had a case a few years ago of a lateral, a third molar, a cuspid, and a second permanent molar. He made a window crown for the lateral, a cap for the third molar and the cuspid and second molar. In making the bridges he made allowance in the crown of each bridge for a square plate let in, the surface of which corresponded with the articulation below. He put the plates in position, took an impression in the mouth, and then made his cross bar, and added the plates, which were held in position in the bridge by a very strong gold screw. He had taken the cross bar off twice in six years for his own satisfaction to see how the mucous membrane looked where it pressed on the roof of the mouth, and he found it quite clean and perfect.

DR. BRYAN

Said he had an old bridge which was taken out and replaced. It was made in 1884, and was his first attempt at bridging across the mouth. He also passed around an old piece of dentistry consisting of the first French teeth that were made with little grooves, and representing half beans, with natural teeth on the same plate set on with pivots. The natural teeth had decayed considerably. There were also molars carved from hippopotamus tusk.

DISCUSSION ON DR. MOORE'S PAPER "NOTES ON THE TREATMENT OF TWO CASES OF EPULIS."

DR. W. E. ROYCE

Asked how Dr. Moore diagnosed between an epulis and polypus in the cases.

DR. MOORE

Said he did not realize that there could be a polypus in that position of the mouth. The only thing he could say was that the surgeon who also saw the case declared it was a malignant epulis. It was a large growth and whenever it was touched it bled very much. He made no microscopic examination.

DR. ROYCE

Pointed out that there was a vast difference in the treatment of the two conditions.

DR. MOORE

Thought polypus only came in the nose.

DR. ROYCE

Said that Mr. Tomes spoke of polypus in the mouth.

DR. MOORE

Said according to what he had seen in hospital practice he was certain one of the cases was epulis.

DR. HIRSCHFELD

Asked whether a solution of white arsenic in water was injected.

DR. MOORE

Said he used a 1 per cent solution as suggested by the surgeon.

DR. W. MITCHELL

Asked whether the epulis was destroyed by a sloughing process or by absorption through arresting the blood supply.

DR. MOORE

Said he did not see the case under treatment, as it was too complicated for him to undertake it. The woman was pregnant, and he did not feel justified in keeping her in his own hands, and therefore left the matter to the medical man. As far as he could understand, the thing simply dried up owing to interference with blood supply at the root.

DR. W. MITCHELL

Said his reason in asking the question was that in the application of arsenic to a pulp, occasionally under the most careful treatment, there would be leakage of arsenic into the surrounding tissues and a great amount of sloughing would take place. He was wondering whether Dr. Moore's cases were healed through the impairment of nutrition, and gradually dried up, or by the sloughing process. He suggested that the safe way of getting rid of any such small growths was by the use of ethylate of sodium, which produced a sloughing easily controlled, painless and satisfactory.

DR. WEBSTER

Said that twelve or fourteen years ago a lady came to him for the extraction of roots and restoration by a bridge. There was a growth from the root of the second left lower bicuspid, and the question arose whether it was benign or not. He deemed it best to take the tooth out and bring the growth with it. The patient lived some distance away and he asked her to come and stay near by for a week and let him see whether the conditions indicated that it was a malignant growth. When she came back at the end of a week or ten

days, the growth had increased to four or five times the size of the original one. She consented at his suggestion to its surgical removal; he removed it and curetted the bones very thoroughly. There was no family history. He saw the patient four or five years after it was removed and it had healed thoroughly. He did not feel justified in putting in a plate that might cause irritation, but the gum was perfectly healthy. He gave the growth to a friend, a surgeon of some prominence, and a slide was made and they were satisfied it was epithelioma. One of the best authorities in New York to whom it was sent confirmed that view. If it was epithelioma the question arose: Was it possible to eradicate it by taking the case very early, or was it an error in diagnosis? He should very much like the opinion of a medical man with regard to the effect of the use of arsenic upon a foetus three months before birth.

DR. A. WETZEL

Had seen four or five cases of epulis, generally caused by some decayed roots, and in removing the roots and scraping the alveolus they did not appear again. About a year ago he saw an epulis behind the first permanent molar of a child seven years of age. The tissue did not seem to be very fibrous, but rather vascular. He was afraid of a great deal of hemorrhage and advised the mother to take the child to the medical man first of all and ask him what he thought about it. The medical man advised the mother to go to Dr. Sauvez, in Paris, who was much more familiar with surgical operations in the mouth than a great many dentists, and Dr. Sauvez removed the tissue and cauterized the patient and the growth had not occurred again. He should like to know whether any member had seen an epulis coming behind a healthy tooth where there had been no mechanical irritation of any kind.

DR. MILLER

Wished to know if any of the members had had experience of the use of galvano cautery in the removal of an epulis. It had been tried in three cases of the nature of polypi, pear-shaped growths with narrow necks. It was quite possible to have a polyp of the gums, or the tooth, or the nose. Polyps of that kind had been removed by means of galvano cautery. In one case there was a growth just behind the upper first bicuspid. There had been a growth about six months previously, which had been removed surgically; and there had been return. The

growth was on the level of the grinding surface of the bicuspid, and was about the diameter of the thumb. Galvano cautery was used and there had been no tendency to return, although two years had elapsed. His experience with the method was very favorable; it was comparatively painless, and the only disagreeable thing was the intense smell of fried meat. With regard to the injection of arsenic, it should be remembered that it was only one or two drops of a 1 per cent solution, which would be somewhere about a thousandth of a gramme, a dose so small that he did not think it was possible any general ill effects could be produced by it.

DR. WETZEL

Said that if the epulis had had a very small attachment he might have tried to get rid of it by cutting it away or destroying it with a silk ligature, but the attachment was so large that he did not see any possibility of removing it without surgical treatment.

DISCUSSION ON DR. HIRSCHFELD'S PAPER "PAINLESS EXCAVATING AN OPEN QUESTION."

DR. W. D. MILLER,

Who had been asked to open the discussion, thought there was not much to be said. The essayist had given a thorough *rèsumé* of the present position of the question, and they could only congratulate themselves on having such a perfect presentation. He might perhaps differ from Dr. Hirschfeld to a slight extent on one point. Dr. Hirschfeld had held the opinion that applications of chemical substances to the dentine were as good as useless, and must remain four, six or eight months before giving any result. He, Dr. Miller, had been in the practice of making applications of that kind and leaving them only twenty-four hours and nearly without exception had very good results. After superficially cleansing a cavity, he applied a concentrated solution of carbolic acid and cocaine on cotton, and covered it up with oxyphosphate of zinc, and in nine cases out of ten there was a marked diminution in the sensitiveness of the cavity on the following day. By taking a pledget of cotton saturated with carbolic acid and touching the cotton with some nitrate of silver, and applying it to the bottom of the cavity, there would be a still more marked insensibility on the following day. He had frequently had a patient come to him to be treated, and if he found a cavity particularly sensitive,

or even a number of them sensitive, he made an application of cocaine and carbolic acid, covered it up with cement and went on to treat another cavity which was less sensitive. In the course of a quarter of an hour he could take out the application and find the cavity insensitive enough to proceed with treatment. It was perhaps going too far to say that dentists were not in the position to accomplish anything in that direction by chemical means. Of course, everyone agreed that according to our present knowledge dryness and sharp instruments were the two very best means for working on sensitive cavities. It was remarkable how after drying and treating with absolute alcohol and taking new instruments one could excavate a cavity with very little pain. Time after time at the institute, when patients had been whining and crying under excavations by a student; he had given the cavity a little superficial treatment in the way he had spoken of, and the operation had been continued without any pain. With regard to the injections recommended by Dr. Rosenberg, that was a subject to which attention ought to be directed. Rosenberg and others in Berlin claimed to have made injections of *enseminal*, *adrenalin*, *heizenalin*, in over a thousand cases, and it had been repeatedly used at the Dental Institute at Berlin with success, but not always. Sometimes in the lower jaw success had not been met with. It had been also established that by making an injection of *adrenalin* between the lateral incisor and the cuspid it was possible to anesthetise both pulps at the same time and pulps exceedingly sensitive to electric current would then stand a current six or eight times as strong without the slightest sensibility. By that means it was possible to completely anesthetize the pulp in the majority of cases, and as soon as the pulp was anesthetised the dentine was always anesthetised. But the pulp became in an extreme degree anemic and the anemia remained from twenty minutes to two or three hours, and it was a question whether the pulp would not die as the result of the treatment. Some people had claimed to observe cases of the death of the pulps, but Rosenberg and others claimed that they had never yet seen a case in which any detriment to the pulp ensued. They had had an opportunity of examining a case six months or a year after injection and always found the pulp in a perfectly healthy condition. Naturally, if any other remedy directly applied to the cavity could be found to bring about the same result it would

be much preferable, because everyone hesitated to proceed to an injection when not absolutely necessary. With regard to the instrument of Dr. Meyer, Dr. Hirschfeld had taken a perfectly proper position. One of the great difficulties was boring a hole; the liquid could not be injected into the hard dentine without some sort of cavity in which to insert the nose of the syringe, and the question was where to bore the cavity. It had to be bored as near the pulp as possible. In his own hands the method had not given very much satisfaction, but Dr. Watson told him he had accomplished wonderful results with it. He doubted, however, whether the forcing of a local anesthetic of that kind into the dental tubules would bring about the death of the pulp unless it contained arsenic, and he believed the instrument might be used without any hesitation.

DR. WETZEL

Said that Dr. Bogue, who used to practice in Paris, spoke at the last meeting about cataphoresis, and said that he considered the treatment ought not to be much employed because the pulps in the teeth served the useful end of being a guide as to how near an approach could be made. Dr. Bogue mentioned several cases where cataphoresis had been employed and the tooth put into such a state that the pulps were exposed without the dentist noticing it. The tooth was filled, the filling put on the exposed pulp, and the patient had to return to the dentist to have the filling removed and the pulp destroyed. If dentistry was entirely painless patients would take much less care of their teeth. A dentist in America had put on his chair in large letters the legend, "Thank the Lord you are suffering; it is the best sign that you are living." In his own practice he had seldom had patients for whom he had not been able to clean out a tooth at the one sitting, principally by using cocaine with alcohol or Robinson's remedy, but he agreed with the speaker that the best thing was sharp instruments. As long as there was any moisture in soft tissue, even with a sharp instrument a certain amount of pressure was caused, which was communicated through the protoplasm down to the nervous system as through a bladder of water. But if the cavity was dried thoroughly with alcohol and warm air, and a sharp instrument used, no pressure could be produced and the caries could be taken out almost without pain.

DR. W. F. KELSEY

Said that amongst the substances cited for treating dentin nothing had been said of those which he used himself, chloride of lime and ethyl chloride. He had been using chloride of lime for twenty-five years. When a tooth was extremely sensitive he put in a little chloride of lime with moisture—it had no effect if dry—and it caused slight pain for about five minutes, but when the pain disappeared it was possible to excavate a tooth that previously could not be touched. In many cases the patient submitted to the operation with great pleasure. He used ethyl chloride for small cavities, which generally gave the most trouble. The pain was not very severe and in a moment the tooth became like a block of ice and one was able to excavate it as one might an iceberg. He did not think it caused any disturbance to the pulp.

DR. J. W. GALE

Suggested to Dr. Watson that the first little boring could be made absolutely painless in the most highly sensitive cavity by simply taking the ethyl chloride on the bur point and bringing it quickly into contact with the tooth. It could be done in the hundredth part of a second and there were very few teeth that could not be operated upon in two seconds with ethyl chloride.

DR. E. F. DAY

Endorsed the remarks of the last two speakers. He had had the greatest success with ethyl chloride, the whole tooth becoming practically a block of ice. There was very little shock, and he had been able to cut out the most sensitive erosions he had ever come across. As far as he knew it was the quickest and best method of treating such cases.

DR. H. L. SCHAFFNER

Said that chloride of ethyl answered very well when it could be applied, but the application itself was painful. He had been thinking for a long time whether it was not possible by means of gradual dosing to bring the tooth to bear the extreme cold. He found he could apply cold water almost without pain to a tooth by gradually tempering it with hot water, beginning at blood temperature and coming down to cold water. If that could be done without shock, which he thought was the cause of the pain, it would be possible to get a temperature of five or six degrees below freezing point. The

only thing would be to gradually lower the temperature so that the patient would not be aware of it. Some twenty years ago there was a suggestion to use a little pipe through which passed some freezing salt solution. The solution was brought in gradually and the part was made insensible by means of repeated applications.

DR. N. S. JENKINS

Felt very grateful to Dr. Hirschfeld for having so admirably presented his case. Of all obtundents that could be quickly used he preferred chloride of ethyl, and there were certain conditions under which that agent could be employed where there was a certain danger to the vitality of the pulp. Under some circumstances the pain was very considerable for a short space of time, and in those cases he found it most desirable to place in the cavity a small pledget of cotton which kept the spray from falling on the immediate neighborhood of the pulp and gave at the same time a far less painful anesthesia. It operated with almost equal celerity and with a minimum of danger to an exposed pulp.

DR. W. A. SPAULDING

Remarked that it was said that the tooth became like a block of ice by the use of ethyl chloride, and it occurred to him there might be the danger of affecting the pulp or of affecting the periosteum, so that the tooth became in fact a dead tooth, and if it had to be crowned or anything done to it, it would become a foreign substance.

DR. W. MITCHELL

Said it seemed from the discussion that the best obtundents were two possessing features in common, chloride of lime and chloride of ethyl. It was a question whether that was due to the action of the chlorides. There was a filling material very much in vogue a number of years ago called Houghton's oxy-chloride of zinc, which was one of the best obtundents, and was frequently used as a temporary filling, and he thought its obtundent effects was due to the chloride of zinc that was used as the menstruum. Chloride of zinc being an astringent would produce very pronounced anesthesia of the dentin and would permit a cavity which had been flooded with chloride of zinc to be manipulated successfully. That an astringent would work in that way was evident from the fact that good anesthetic effect could be obtained from a solution of glycerine and tannin. There was no doubt that the anesthetic effect of the two agents were dependent on

some form of hydrochloric acid or chlorine in connection with other chemical substances.

DR. RATHBUN

Said his experience of the oxy-chloride was that it produced a certain zone of insensibility which was more or less permanent and he should imagine chloride of lime would do the same, but the action of ethyl chloride was essentially temporary. That was a radical difference.

DR. W. MITCHELL

Observed that he intended to convey that idea, that one form of insensibility was temporary and the other permanent, owing to the coagulative properties of chloride of zinc.

DR. KELSEY

Was of opinion that if the sensitiveness returned immediately, there was no injury to the pulp, and he did not think there was any injury. Chloride of ethyl was used every day, and so far as he knew without injury.

DR. WETZEL

Had used chloride of zinc for several years and found it was very painful when introduced into a cavity. He should like to know whether chloride of ethyl could be employed directly for a very small spot or whether it would touch the neighboring teeth and injure the enamel.

DR. BRYAN

Had had experience with ethyl chloride, but owing to the primitive arrangement of his chair, on which he had no straps to hold the patient down during the application, he had discontinued the use of it. Sailor's anesthetic was a valuable remedy which he had used, but it had apparently some arsenic in its composition. He had used it in over 150 cases, and although it contained arsenic in slight quantities he had never found it had any deleterious results in after years. In regard to pressure anesthesia the Meyer system seemed to be desirable, but he hardly understood how pressure was brought to bear on sensitive dentin as the method had been described. He had used pressure anesthesia in another way. He had taken one of the little hollow caps used for capping exposed pulps in case of pain and had inserted a needle through it and filled the cavity and the space between the adjoining teeth with a quick setting cement, and with

the point of the syringe detached from the syringe he had left it in until the cement hardened between the teeth, if necessary holding it with a pice of tape. As soon as the cement was hard he made his injection, obtaining the pressure anesthesia by the fluid. The result had been very good. The results of injection with cocaine were such as to lead him to use cocaine and the combinations of cocaine and adrenalin with perfect satisfaction, and without any danger to the vitality of the pulp. But whatever he did for his patient in the matter of sensitive dentin, he had a little method he employed when he had his own teeth filled, and sometimes he induced his patient to adopt the same remedy. He had a bottle with a large mouth into which he put a piece of paper or cotton wool and a few drops of chloroform and took a few whiffs before being operated upon; there was a stage of chloroform, the second stage, which was valuable in that way. If there was any weakness of the heart an admixture of ether with the chloroform was very desirable, because it stimulated the heart and prevented any deleterious effects. He had never used chloride of lime. Dr. Jenkins had recommended hot carbolic acid. He had tried Dr. Jenkins' method of heating it and putting it into a cavity, but had found the momentary pain from the application of the hot carbolic acid was objectionable to the patient and he had therefore adopted a method which he communicated to the Institute of Stomatology of New York some years ago. He took the copper instrument used for heating up bridge work and taking out temporary gutta percha fillings and heated it up. He put the carbolic acid into the tooth at the temperature of the blood, and had a piece of cotton wool on the table saturated with carbolic acid. To this cotton he applied the heated point of the copper, and if the point was too hot the carbolic acid would give off a vapor. When no vapor was given off he knew he had a heat which could be borne by sensitive teeth, and applied the instrument to the tooth. If a large piece of cotton with carbolic acid was allowed to extend out from the tooth he could gradually force the copper point in and get an increase of temperature. After several seconds the copper point was re-heated and the same procedure gone through, and after two or three applications of the hot instrument there was a considerable permeation of the dentin and superficial sensitiveness was very much reduced.

DR. JENKINS

Thanked Dr. Bryan for the suggestion. It had been his experience that it was desirable to have a strong solution of cocaine in the carbolic acid and that it should be applied when there was no more steam. It was heated in a test tube, and a pledget of cotton was wetted in it, and only applied to the cavity when steaming had ceased and there was only a gentle heat. It worked most efficaciously and had the great advantage of very soon reducing superficial sensitiveness, and its antiseptic influence on the softened decay of the cavity was admirable.

DR. W. A. SPRING

Said that he noticed Dr. Jenkins, in speaking of Meyer's obtundent, said the injection was put into the tooth with all one's force. "All one's force" was a relative quantity and there was a danger of using too much force. He had twice used the method and certainly in the first case too much force was used and the injection was very painful, although the pulp was obtunded and the excavation accomplished without pain. The pulp, however, was so inflamed that he was obliged to destroy it afterward. In the second case he used a great deal less pressure and accomplished the result with just as much success. He did not think the essayist had given sufficient credit to cataphoresis. He was very fond of that method in extreme cases, but recognized that it required a long time, especially in extremely sensitive cases. His success had been so great that he could not remember a case where he had failed to secure anesthesia by that means. He only used it in very extreme cases and arranged beforehand to have plenty of time so that he could give whatever time might be required for the purpose.

DR. KELSEY

Said that in Marseilles there were a great many sea-faring people, and he had known a special obtundent termed sailor's anesthetic, but he did not know that a special obtundent was needed for the teeth of sailors!

DR. SCHAFFNER

Referred to another method of dealing with sensitiveness independently of anesthesia. There was a distinct difference in the sensitiveness dependent on the manner in which the dentin was cut. Of late he had been successful in many cases by cutting dentin in the

following manner. Instead of using the usual bur and cutting transversely, he cut vertically to the axis of the dentin, and he found that with a drill with a flat point he could cut a series of little holes and afterward operate with half the pain that would be otherwise occasioned. What generally bothered most people was to get an anchorage; by drilling a series of small holes he could cut the dentin with very little pain compared to that caused in using a drill. When the holes were very nearly touching each other he removed the remaining section or finished with a bur.

DR. BRYAN

Said that Dr. Schaffner reminded him of the kind-hearted man who was instructed to cut the tail of his dog, and being kind-hearted he would not cut it off all at once, but cut it off inch by inch.

DR. SCHAFFNER

Declared the pain was much lessened by his method.

DR. WATSON

Was very much interested in the remark made with regard to chloroform. It was only a short time ago a patient wrote to him asking him to administer chloroform and he refused to give it because he had been always taught to believe that the danger of chloroform was in the first and second stages, and that the surgeon never produced pain in the first or second stages of chloroform because of the danger of reflex action, and that operating in that particular stage was apt to bring about reflex action. The action might affect one center or another center, but was just as liable to affect one as the other. If it affected the center of the pneumo-gastric system he should think there would be extreme danger. He would be quite willing to work under complete anesthesia, but would not care to do so under partial anesthesia.

DR. BRYAN

Said that ten long breaths out of the bottle certainly did not produce any serious condition. He should perhaps have said it was the first stage. He demonstrated his method of operating upon a patient by holding the patient's head as hard as possible, pressing the cranium as much as possible and doing his work quickly with a tremendous pressure. It was only possible to work in that way on the lower teeth and not on the upper.

DR. WATSON

Said he had been reminded by the Secretary that the records of the International meeting in St. Louis contained a method of passing an electric current through a tooth. A little salt water was injected into the root of the tooth and then by making the electric connection and by putting one electrode into the tooth and bringing up an electric stream to $1\frac{1}{2}$ milliamperes, anesthesia was produced. The direction of the current was from the positive to the negative. The principle underlying the method, he understood, was that it broke the salt water up into free chlorine, which passed into the tissue. He had had so much success with it that he was quite enthusiastic about it, especially in cases of periostitis. He had had severe cases of periostitis in which the pain had all gone in three hours. It was somewhat of the same principle as cataphoresis and might be done with the cataphoresis machine. He had used it with a great deal of effect in a case where a pulp had died, to which there had never been an opening. He made a hole sufficient to get the electrode in and injected salt water and then applied the stream of electricity for about five minutes. Afterward he put in a 4 per cent solution of formaldehyde. He had also found the method extremely useful in cases where teeth were a little sensitive.

DR. MONK

Said the patient Dr. Watson referred to came into his hands. She was a most sensitive patient, and most difficult to handle. She explained to him Dr. Watson's method of operating and how quickly Dr. Watson had relieved her pain.

DR. HIRSCHFELD

In reply said that in writing his paper he had two objects in view, first to find out if any member knew of anything not included in the paper, and secondly to induce one whom he knew very well to devote himself exclusively to the question. He intentionally left out the question of ethyl chloride, because as far as he had employed it the first shock was so dreadful to the patients that they would not hear of continuing it. But if an authority like Dr. Jenkins advised the use of such a remedy, and at the same time gave particulars of a method of applying it without too much pain, he felt very grateful. The employment of chloride of zinc, he was afraid, would have to be added to those things he had described as useful in some cases.

Its employment in many cases was very painful to the patient. With regard to Dr. Bryan's remedy, he thought it was impossible to employ chloroform in general practice simply to excavate the cavity of a molar. It was very nice to know a possibility existed of overcoming pain by general anesthesia, but it did not advance the question very much. The second point he had in view was to get one or two men belonging to the Society to take the question into their hands and work it up. He was proud to see that Professor Miller had kindly opened the discussion. He did not know when he wrote the paper that the Society would have the presence of Dr. Miller, but if he had known it in time he should have probably written the paper in such a way as to put the matter in Dr. Miller's hands altogether. Dr. Miller had the time and necessary knowledge to study such a very important question, and he had not the slightest doubt, if Dr. Miller took it up, but what there would be a chance of something more being known about the matter at the next meeting.

ILLINOIS STATE DENTAL SOCIETY, MOLINE, MAY
9, 10, 11, 1905.

DISCUSSION ON THE PAPER OF DR. W. A. JOHNSTON.

DR. C. R. TAYLOR, of Streator:

Mr. President—I am sorry I have been selected to open the discussion of this interesting paper, for I have made no investigations along this line either clinically or experimentally, and I did not see the paper to read it until this morning.

There is one slight criticism I wish to make, and that is that nature hardly incased the pulp in a bony box to keep it from exposure. Nature no doubt had another point in view.

We need to approach the clinical desensitizing of teeth with the utmost caution if we would avoid unpleasant after-results, remembering that cocaine is a poison of protoplasm itself, and besides that, there is always danger of poisonous infection of the pulp from ptomaines and germs whenever excessive pressure is used. Our failure to get the results sought for is no doubt due to our ignorance of the action and reaction of the drugs used, and the chemical reactions that may occur in the teeth we wish to affect, and if we are

to reach definite results we must know just what we are doing. It is to be hoped that Dr. Johnston will continue this investigation.

DR. E. K. BLAIR, of Waverly:

The subject discussed by Dr. Johnston is of great interest to the dental profession and particularly to our patients. It is obvious to all of us that the prevention of pain is of the greatest importance. To produce local anesthesia within the zone of decay without jeopardizing the life of the pulp would be the longest stride toward saving teeth that our profession has ever made. Generally speaking, when there is only a moderate portion of sound dentin remaining we now remove the pulp with a minimum amount of discomfort to the patient, but the preparation of cavities in sensitive teeth for the proper reception of fillings is a source of great annoyance to both patient and operator. No better evidence that fluids under pressure will penetrate the tubuli is needed than that we often stop the drill a little short of the pulp chamber and apply the anesthetic, using pressure for a short time, and then find it possible to open the pulp chamber without pain. How thin this remaining dentin must be is a debatable question, but that it may vary considerably in thickness with almost uniform anesthetic results I have no doubt.

The point of greatest moment to me seems to be whether we may safely inject any fluid into the tubuli and not ultimately lose the pulp. There is a long list of applications used in the past, the purpose of which was to desensitize tooth substance, that have been abandoned because they could not be confined to the proper area, remedies that proved to be pulp destroyers as well as local obtundents. This group of applications you may consider as having been absorbed and may conclude that there is a difference betwixt forcing fluids by pressure into dentin and absorption without pressure, but why may not similar effects be produced by one process as the other? We do know that discoloration by infiltration occurs rapidly from the pulp outward, showing that the contents of the tubuli may undergo decided changes in a short time. Observe also the action of bleaching agents applied in cavity and pulp chamber, where the pressure produced by chemical changes in the drug proves sufficient to penetrate the tubuli.

I do not doubt that with good walls and the cavity small enough that regurgitation may be prevented we may force fluids into the

dentin. I have used orange wood points trimmed to fit the drilled cavity, and rubber dam as a washer, and produced what seemed to me phenomenal results. No doubt many have used like appliances. The more nearly the fluid resembles water the better the result.

I should prefer operating through a cavity made by a drill in some portion of the tooth to be removed subsequently in shaping the cavity to trying to apply pressure to the irregular walls of cavities formed by decay. By relying upon the drilled cavity we may hope to have some knowledge of the quantity of local anesthetic application applied, and if only a limited amount is used probably the overplus might be carried away leisurely through the circulation without harm to the pulp. The peculiar characteristics of pulp tissue and the experiences we are constantly having with the pulp and the tissues just beyond the apical foramen warrant us in exercising great care in the management of such cases. Pulps that give no warning sign of danger during the period of treatment may prove very troublesome subsequently. For some time I have, when removing pulps by local anesthesia, felt most secure when I have promptly removed the desensitized pulp, hoping to prevent the drug being carried beyond the apex. The best results are obtained when the pulp chamber and root canals are thoroughly flushed with some cleansing application after the pulp is removed. These facts seem to warn us of the great necessity of observing care in the penetration of dentin by fluids for treatment of sensitive dentin. To me there is not much doubt but that in favorable cases we will penetrate dentin with fluids. The method best suited to the operations and the limitations that nature will put upon us are the only questions at issue.

DR. R. L. COCHRAN, of Burlington, Iowa, (by invitation):

Don't go home and think you can always desensitize dentin with the instruments here shown you. You may be able to do so in one case out of fifty. At least that was my experience. I have used the Meyers and the Higgins instruments, and had but little success. One case, a young girl of fifteen years, was a perfect result, but in thirty-five other cases the result was unsatisfactory owing to the seeming impossibility to hold the instrument so as to confine the fluid. I wrote for instructions and followed Dr. Higgins' advice to drill deeply into dentin, but I had no better result. While I am drilling into

the dentin and using the instrument, I can prepare the cavity. My experience therefore with these instruments has not been satisfactory.

DR. JOHNSTON (closing the discussion) :

Dr. Taylor took me too seriously when he suggested that I said that the only reason the bony box was made was to protect the pulp. We both know better than that.

This is not a discussion as to the propriety of using drugs, but merely whether or not drugs could be made to penetrate dentin. You may judge from the pictures and from the specimens whether or not that has been accomplished, and whether it is worth while trying it in the future. I wanted to have the conditions as nearly as possible as they exist in the mouth, and for that reason I had the teeth as nearly fresh as possible. I tried in vain to find a patient who was willing to let me inject a tooth and then pull it out, but I did the best I could with teeth freshly extracted and kept moist.

The idea of forcing medicine into the dentin for obtunding purposes is comparatively new, and so far as I know this is the first paper read in public on the subject. I have seen nothing in the literature of the day concerning it.

This paper does not represent one-tenth part of the experimental work done, as I did not care to tire you with a detailed statement of successes and failures. This is just the beginning and time alone will tell whether or not it will pay to pursue the subject further.

DISCUSSION OF DR. POUNDSTONE'S PAPER.

DR. J. N. CROUSE, of Chicago :

Mr. President—In opening the discussion on this important paper I want to make the criticism that in treating any hydraulic cement, and I believe that all phosphoric acid cements are hydraulic, they will be defective if treated dry, and not kept constantly in moisture. The cement will shrink rapidly, and get very brittle, and be entirely worthless. The defect will be in proportion to the rapidity of the setting. I make that statement and I think it will stand. Therefore that part of the tests and experiments which were made dry I would not consider reliable.

The next proposition is the question of the bubbles in the cement when mixing. I am going to venture the proposition that those bubbles occur in cement that has coloring matter placed in it on account of the demands of the profession for certain colors. If

pure cement is used, without any coloring matter, I do not believe there will be many bubbles. The best cement to use is the light yellow, because it is the natural color and contains no coloring matter, and certainly cement without coloring matter is better than one that is acted upon by the phosphoric acid in setting.

The next proposition is expansion. I am not prepared to dispute the essayist's proposition that cements which expand will be penetrated by the moisture. That may be true. The question of expansion is an important item, and so I am going into that somewhat extensively. If you set an inlay, and put twenty-five pounds' pressure, or a heavy pressure, on it a considerable time, when the pressure is removed the cement will expand so extensively that the inlay will be misplaced, and will be defective on that account. That is even true with a much lighter pressure. In all the tests I have made for expansion I have used little brass tubes about half a big as the end of my little finger, in which I placed cement, and placed a little button on the end of that. I get a reading from the micrometer as quickly as I can, after which I throw it into the moisture and take the reading from time to time. Those that are left under the pressure of this little needle for ten or fifteen minutes while setting (the spring of which is just as light as will carry the needle on the dial of the micrometer), will expand afterward from ten to forty ten-thousandths of an inch. The same cement allowed to harden without pressure will not expand more than two or three points. The question of expansion is not altogether in the cement. It is in the manipulation of and pressure on the cement. Now think what that means. You have a nice, carefully fitted inlay that if cemented in right will be at the surface of the enamel. If that expands enough to bulge out and show the edge just see what a defect that makes in the operation. Therefore I contend that pressure is a mistake except to force out to the surface surplus cement.

The same is true in setting a crown, and especially true in a well constructed bridge where the operator has gone to the pains of getting the occlusion and contact points perfect. Very often there is quite a bulk of cement, and the patient is requested to have his mouth shut, with a piece of punk under the bridge to hold it at a given pressure. In two or three days the patient will come back with the bridge striking too hard, and the operator has to cut it down.

That is due, in my judgment, entirely to the fault of pressing the cement home, and holding it there.

Then the next and most important question in regard to cements is the lack of resisting fluids in the mouth or any fluids you may use to test it with. In making my tests along this line I have taken a fresh package of cement and mixed it, and placed it in dilute analine. It will resist that well today, but a week after I make another test of the same cement, and in two or three days, or a week at the most, the analine will have penetrated all through. It deteriorates under certain physical conditions which are not well understood. The only safe way for a man setting bridges or crowns is to take the surplus of the cement each time and suspend it into the dilute analine, and from time to time test it. If you will do that you will be surprised to see how many times you are setting your work with cement that is not impervious to moisture, and which is ruinous to the operation.

DR. W. V.-B. AMES:

I want to take up this subject of moisture in the atmosphere on a summer day. I think if we could have an inclosed space in which you would mix your cement, and see what you were doing through a glass, but only have room enough to get your hands beneath a sliding front, that we could get uniform results summer and winter. The air within could be kept dry by the use of sulphuric acid. We get best results in the winter in an artificially heated room.

I want to say something in regard to the expansion or contraction of a given cement in a thick and thin mixture. Having a possible zero cement you can mix it stiff and get shrinkage, and you can mix it thinner and get expansion. This fact will apply if we can ever get down to the nicety which Dr. Fred Noyes says we need. There is no uniformity in the behavior of cements for the one reason that there is a difference in the consistency to which it is mixed. There is a happy medium which we ought to be able to get, but it is a somewhat difficult matter, and I doubt if we will ever be able to use any such material to get really definite results. However, I think we can usually come near enough to it for all practical purposes, and that a great many of us come pretty near getting certain definite results. I believe that a skillful mixer of cement can know that he has a certain proper amount of powder in a mix by the *feel*

beneath the spatula, and that this knack should be developed by carefully studying these materials.

This is certainly a very interesting subject as Dr. Poundstone presents it. We are to be congratulated that he has many active years ahead of him in which to follow up this work. I dare say that Dr. Poundstone will agree with me thoroughly in that this subject, from the manufacturers' standpoint, and from the investigators' standpoint, and from the dentists' standpoint in checking up the manufacturer, has not been threshed out by any means.

I regret that Dr. Thompson is not here to discuss this subject from the practical standpoint of using cement for the setting of inlays, which this paper most touches, because Dr. Thompson has most probably worked this out a little bit more and better than any one here.

In regard to Dr. Poundstone's work, I would say that if some one else carrying out a similar line of experiments should arrive at results as different as the results and conclusions of the different manufacturers it would certainly be very interesting to have some one else to take up the work.

I want to say, for fear that I will not have a chance later on, that I hope some of the simpler tests made by Dr. Poundstone will be carried out by a large number of the members. If you followed him accurately, or if you would inquire of him more explicitly you would find that his later tests, which I consider the most valuable, wherein he cemented one tube ground upon the outside into another tube ground upon the inside—that he simply selected one tube which fitted snugly into another, and ground one upon the outside and one upon the inside, closing by blowpipe the end of the inner tube entirely and with the outer leaving a slight vent. This is a very simple means of making your own tests, and whereas Dr. Poundstone has not mentioned materials, it is important that you should make the tests for your self. With the outlay of a small amount of money and time you can make crushing tests. I propose to explain soon a very simple apparatus—not tonight—for ascertaining the comparative crushing stress which different cement masses, or masses of amalgam, will stand. The value of this work to you must depend upon your following it up, after a fashion, in your own way.

The appearance of the different cements, after setting, as has

been shown by Dr. Poundstone, is a revelation to me to an extent. I would very much like to be in touch with him in doing this work, and I hope that I shall be able to be sometime in the future. I have seen results with some cements in mass under the microscope which I can easily imagine, thus extensively magnified, would appear as some shown here tonight. Dr. Poundstone speaks of the capability of a cement being compressed to the thickness of our inlay matrix, one one-thousandth of an inch, or thinner. This depends necessarily upon the fineness of the powder, to begin with. In addition to that the flow of the cement, as mixed, will depend somewhat upon the peculiarities of the liquid with which the powder has been mixed. That depends upon the modification of phosphoric acid by the manufacturer, which will give sometimes a liquid which will tend to make a gummy mixture, which will not have the proper flow, while other modifications will give a desirable flow. The desirable flow can not always be embodied with the best properties otherwise, so that in working this out, as far as I know anything about it, it is a matter of deciding upon a happy medium, and not taking the ultra effect in one direction and sacrificing valuable properties in another direction. The fineness of the powder, itself an important item, affects the setting qualities of the cement—a fine powder with a given liquid, necessarily giving rapid setting, simply because of there being a greater extent of zinc oxide surface presented to the phosphoric acid, and the chemical action being more rapid. There is such a thing as bringing the powder to a state of impalpability. There is such a thing as getting the powder so fine that it is almost unmanageable, but here again a happy medium must be adopted.

Dr. Poundstone speaks of tests for adhesion. Of course the necessity for that is admitted. Here comes in the question, under what conditions do we get adhesion? I believe there is such a thing as adhesion in some muscillaginous materials which is very different from the adhesion we would get from a film of cement. I believe the adhesion from a film of cement depends upon the form of particles in which the powder is used, and again, upon the nature of crystallization. There are angles of crystals which would come nearer entering the inequalities and irregularities of the dentin surface, and this would give the retention which I think we must get in a film of cement against a surface of dentin. A cement which

will adhere to a surface of dentin will not adhere to a surface of polished glass. Slight expansion or contraction of course defeats adhesive qualities.

In regard to the test for adhesion, using ivory blocks, I have been able to obtain more satisfactory results than these cited, but it was found that human dentin seems to present a better surface than ivory. If *normally moist* human teeth are cut to plane surfaces and two such cemented together and placed in water, there will usually be very remarkable adhesion if a cement with a proper powder and liquid be mixed to give practically no expansion or contraction.

I want to say something about what I consider the cause of the bubbles. I have in a rough way examined cements under magnifying powers, and I have noticed that we have two classes of spaces. One appears to me to be an irregular air space. Other spaces seem to be the result of the formation of some other gas. I do not agree with Dr. Crouse in the least that it is a gas coming from the action of phosphoric acid upon coloring matter, that is, if metallic oxides be used. There would not be the least tendency for the formation of gas because the action of phosphoric acid upon metallic oxides would yield a phosphate and *water* instead of gas. If you were to have a foreign material which would yield gas it would probably be a carbonate, yielding carbonic acid gas. If there should be finely divided metal (iron or zinc) mixed with the oxide it would give hydrogen gas. I believe that such bubbles as are not simply the pores of a porous material, come from accidental *dirt* instead of intentional coloring matter. With utmost care I can see how a minute trace of deleterious material might be present.

Although not entirely within the province of the paper, I want to say that I believe that many failures in attaching inlays are caused by the too thorough drying out of the teeth to which the inlays are to be attached.

DR. FRED. B. NOYES, of Chicago:

I can not let the discussion of this paper go without a word because I have been specially interested in it from the very start, and in fact I asked Dr. Poundstone to undertake these experiments a year ago.

It appears to me, after watching these experiments very closely, that the subject of cement requires in its investigation the closest

observance of minute details of any subject that I have ever had anything to do with. Apparently the smallest variations in physical condition produce very grave differences in the resulting mixture. I believe that we have not yet gotten this investigation down to a point of niceness that will give us the results which we must look for; I mean, that a very small difference in temperature, other conditions being the same exactly, may produce a difference in the cement, as such, and very possibly other very small differences in physical conditions which we have not yet taken into consideration, may be important factors in the resulting compound. I almost have the feeling that this stuff is too delicate in its requirements, and that we could not meet all necessary physical conditions with regularity. Materials act under laws, and if we find those laws we should be able to obey them. However, we may find that those laws are too exacting for the conditions under which we must work, and I have almost come to feel that way about them.

A number of years ago I was very much interested in the investigation of amalgams, and it looked for a while as if amalgam was the cussedest stuff we had, but we found that it acted under laws, and we were able to obtain exact knowledge of those laws, and to obey them. Consequently we get exact results in the use of amalgam at the present time, and we can get the same results every time. Now the question is as to whether we can get the same knowledge of the condition of cements, so as to get the same results every time. We certainly do not get them at the present time.

The observation of the formation of gases in the mixture was a very interesting thing to me. The possibility of this being incorporated air bubbles has been suggested at several times, but I want to say from personal knowledge and observation of these things under the microscope that I am absolutely convinced that the great majority of the bubbles shown on the screen can not possibly be incorporated air because you can see them grow. You take a single field that is perfectly clear under the microscope, and all of a sudden there are a dozen bubbles in it. You can see them with your eyes, and watch them grow. There is gas forming in the compound.

The change in the crystalline form of the material during the process of setting has been an exceedingly interesting thing to watch under the microscope—vastly more interesting than you can get

any idea of from the pictures. You see that a certain set of crystals begin at once, and another set does not appear for a certain time, and the crystalline form continues to change for more than a month. We know from those observations that it is not through setting in fifteen or twenty minutes, but that it continues to change in the film for a week or two weeks, or a month. What is the result of those changes on the relation of the inlay to the cavity, and the relation of the cement to the cavity? I have felt so uncertain about cements that it makes me feel more uncertain about inlays. I have been very much pleased with the beautiful results in gold inlay work, but it makes me feel very peculiar when I stop to think of what we have under it. I do not feel as satisfied about these gold inlays that look like gold fillings as I do about the gold that was hammered to where it belongs. (Applause.)

DR. G. D. SITHERWOOD, of Bloomington:

I am very much interested in this paper. I listened to a paper somewhat similar to this at Niagara Falls in 1899, which was presented by Dr. Wedelstaedt, of St. Paul. The marvelous thing to me is that the experiments correspond very nearly, but in those experiments, instead of having two tubes the cement was exhibited in single tubes, showing how quickly the coloring matter would penetrate not only the sides of the tubes, but through the cement itself. In Dr. Wedelstaedt's experiments moisture and coloring matter penetrated twenty-nine out of thirty different cements.

I shall certainly try to make some experiments along this line myself. Here are two men experimenting, and their results correspond so closely in many respects that certainly every man can make experiments to find out what the physical properties or characteristics of cement are, and what we must do to properly prepare a cement that will have a permanent quality. (Applause.)

DR. J. N. CROUSE, of Chicago:

The physical condition of the room, in regard to temperature, will cause cements to mix differently, and act differently at different times. For instance, if you have a very warm room, and your cement is warm before being mixed, it will set much more rapidly, expand more, and act very differently. I am inclined to think that eventually we will want to keep cement at a certain temperature all the time in order to bring about accurate results, probably in an incubator of some kind. I am working on that now.

DR. C. R. TAYLOR, of Streator:

What can we do in the summer time that will give us uniform temperature? I have tried using a bottle with cold water in it for a mixing slab. There is some objection to it, as on certain days when there is a good deal of moisture in the air the condensation of the moisture on the slab neutralizes the liquid to a certain extent.

DR. C. B. ROHLAND, of Alton:

I would like to ask the essayist when he closes to state whether those cements were of different colors or whether they were of the same shade as nearly as he could get them from the manufacturers?

DR. W. V-B. AMES, of Chicago:

I want to take up this subject of moisture in the atmosphere on a summer day. I think, if we could have an enclosed space in which to mix cement, and see what we were doing through a glass, but only have room enough to get our hands beneath a sliding lid, that we could get uniform results summer and winter. The cement chamber could be kept dry by the use of some acid. I do not think we are troubled in the winter in an artificially heated room.

I wanted to say something in regard to the expansion or contraction of a given cement with a thick and thin mixture, and this will apply if we can ever get it down to the nicety which Dr. Fred Noyes says we need. I doubt if we shall be able to get that nicety, but we need to get a definite proportion of powder and liquid, or a definite putting together of powder and liquid. I don't care as much for definite proportions as I care for definite manipulation. We have zero cement which you can mix stiff and get shrinkage, and you can mix it thinner and get expansion. There is no uniformity in the behavior of cements for the one reason that there is a difference in the consistency in which it is mixed. There is a happy medium which we ought to be able to get, but it is a very difficult matter. However, I think we can come near enough to it for all practical purposes, and I think a great many of us come pretty near getting definite results.

DR. POUNDSTONE,

In closing the discussion, said:

In answer to Dr. Rohland's question in regard to the color of the cements used I will say that I selected the light yellows, as they seem to be the nearest to pure oxide of zinc. I made tests with

different colors, and found that there was considerable variation in the amount of bubbling in the different colors of the same cement. The light yellow showed less bubbling than any other, but I did not touch upon that in the paper, and do not care to bring it up here further than to make the statement that there is more bubbling in the pearl grays, blues and whites than there is in the light yellows.

Dr. Ames brought out the point that there should be no bubbling in those cements that are colored by the use of metallic oxide. I am not a chemist, and have not had the cements analyzed to determine their chemical properties, but if that is true some of them, and in fact nearly all of them, are not colored with metallic oxides.

In regard to the experiments that Dr. Crouse suggests with the analine dye, I want to make that point clear. Placing a pellet of cement in analine dye is a test that has been followed out for years and years, but does not amount to very much. If the cement be penetrated by the moisture, then certainly throw it away; but there are some cements that can be placed in analine dye and kept there for a year, or five years, and the dye will not penetrate the body of the cement at all, and yet the stain will go around it in a cavity or a ground glass tube inside of two weeks. The rule will not work both ways. All cements that resist moisture at the margins will resist it within the body of the cement, but some that resist it within the body will not resist it at the margins. I thank you for your interest in the paper. (Applause.)

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EDITORIAL.

SOME UNSOLVED PROBLEMS.

With all the activity of thought in the dental profession during the last decade there are many problems yet unsolved, and which stand out prominently as pressing for solution. First there is the phenomena which control dental caries. What is the determining factor which makes one mouth susceptible to dental caries and another immune? What particular thing is it in the fluids of the mouth which turns the balance? We must know more about the conditions surrounding the teeth in order to have an intelligent comprehension of the true character of this disease which we are every day trying to combat.

Another very serious limitation to our professional prestige is the lack of definite knowledge concerning the diseases of the periodontal membrane by which so many teeth are lost annually. What are the factors which lead to the breaking down of the tissues about the teeth and the subsequent loosening before which we in so many instances stand helpless? What causes this disease, or this group of diseases? We should know—we must know.

Who has yet solved the color problem in porcelain inlays, and reduced it to a system whereby any man with an eye for shades can have uniform results? It can be done and will be.

Much has been accomplished in the way of improving our cements, and yet much remains to be done. When are we to have a perfect sealing agent for inlays which will not shrink nor change the color of inlays when set with it?

These are a few of the problems which the science of dentistry

today presents for solution. The man who definitely and successfully solves any one of them will make himself immortal in the history of the profession, and yet there is assuredly a solution for each. Let the young men of the profession think of these things, and let them have sufficient professional pride to resolve that not another generation of dentists shall come and go before these matters are cleared up. It is due to the people that this knowledge be acquired, and we, as a profession, stand derelict in our duty till it is accomplished.

THE EDITOR'S DESK.

MY SUMMER VACATION.

Under the above heading the editor purposes publishing in this department a series of articles on a vacation this summer which embraced a trip through Yellowstone National Park, out to Portland, Oregon, to Tacoma, Seattle, Victoria, Vancouver, up the Fraser River valley into the Cariboo District, back to the main line of the Canadian Pacific Railway, among the mountains of British Columbia, and on East through Alberta, Assiniboia, Manitoba and Ontario to Toronto. If he succeeds in imparting to his readers a mere fraction of the interest which this trip had for him the recital will be worth while. The articles will be plentifully illustrated, mostly from photographs taken by the author, and they will terminate as soon as the readers are tired of them. The first installment will appear in the October number.

DOMESTIC CORRESPONDENCE.

NEW YORK LETTER.

The thirty-fifth annual convention of the New Jersey State Dental Society occurred on July 19, 20 and 21, at Asbury Park, Dr. W. G. Chase, of Princeton, presiding. The essays, while not so numerous as heretofore, were of a high standard. There were fifty-three (53) clinicians—many of them operating on patients, while others gave table clinics. The exhibits were even greater than usual in number, being seventy-two (72).

The paper of Sinclair Tousey, A. M., M. D., of New York, on "The X-ray and High Frequency Currents in Dentistry," which was

illustrated by lantern slides was a good paper, practically the same though as was reported to your readers during the winter for another society.

The doctor described more in detail the principles underlying X-ray manipulation, and some recent improvements in its use for dental purposes.

He showed a new dental tube which consists of a Crookes' tube, the body of which being made of lead glass, as understood by your correspondent, prevents the passage of the "active" ray. The lower end of the tube has welded to it a section of glass that does permit the passage of the ray and with this section better dental radiographs are possible, which some of his pictures attest.

The author also demonstrated his dental fluoroscope mouth mirror, which permits the examination of the dental parieties by reflected light from the inside of the mouth. A new film pack and indicator for dental radiography was also shown and how to apply the X-ray and high frequency currents in the treatment of pyorrhea and cancer.

On Thursday morning (July 20th) Robert H. M. Dawbarn, M. D., of New York, presented a paper on "Adenoids." Nothing specially new on this subject was elucidated beyond what we have already made your readers acquainted with.

During the Thursday evening session Dr. A. W. Harlan, formerly of your city, read a paper entitled, "Food in Its Relation to Teeth; Their Sockets and Adjacent Structures."

It was an elaborate paper, full of statistics and giving much food for thought, but seemed to be somewhat beyond the company present, for in the discussion they got away from the main point of the paper, and discussed more the relative value of foods without much consideration of the teeth. Dr. Harlan's summary seemed to be that a mixed diet was best for the general health of the teeth.

The author must certainly have spent months in the preparation of this paper. Twenty-two authors on foods and food products had been consulted and, let us say, digested. They included the Bible and the Koran and on down to Dr. Chittenden's latest reports. Results of government investigations were also added.

The opening paragraph of Dr. Harlan's paper was a quotation from Brillat-Savain.

"Animals feed, man eats; the man of sense and culture alone

understands eating. The fate of nations depends upon how they are fed."

Dr. Chittenden seemed to deduce from his exhaustive experiments that a smaller quantity of proteids was needed and consumed than is generally supposed, or than many authors and experimenters thought necessary. It did not prove, however, that vegetables or a vegetarian diet is best for man.

Another striking paragraph from Dr. Harlan's paper was that "these experiments have no direct bearing upon the question before us today, because we are arguing for use of teeth upon foods that requires for its thorough digestion and assimilation perfect mastication."

"A man's food, if he expects to accomplish much, mentally or physically, must be chosen for definite purposes—to repair waste and maintain tissues," etc. "It must be chosen for bodily repair as well as exercise of the jaws and teeth." "Liquids or semi-liquid foods are not intended for any persons except infants or invalids and edentulous persons, and even then only for limited periods."

Nature produces no food which should not be masticated, except milk.

"This profession can not neglect such a vital question. After the third or fourth year the dentist has nearly supreme control of the organs of mastication, and he should impress parents and children with the necessity for use of the teeth, and guide them in selection of food that must be masticated before being swallowed."

Dr. E. A. Bogue says civilization indulges in soft food, cooked until it is softer.

An extract from Campbell is to the effect that if physicians should realize the importance of providing the jaws and teeth and the muscular coat of the digestive tract with adequate work, an untold amount of disease and suffering would be averted.

"The beginning of ill health dates from the use of semi-liquid and liquid foods by the adult."

"If teeth are not used their sockets become more or less useless."

"Caries is largely a question of environment."

"Living is a dangerous occupation, anyway."

At the conclusion of Dr. Harlan's paper the room was darkened and he had projected on the screen eight pictures, the titles of which were:

"Fed on Condensed Milk," "Fed on Artificial Foods," "Fed on Breakfast Foods," "Diet of Fruit and Nuts," "Vegetarian," "Mixed Diet," "Teeth from Mixed Diet."

"Brought Up on Mixed Diet" was a slide with the photographs of Drs. Stockton, Luckey and Meeker thereon.

Dr. Luckey said in discussing the paper that "living is a dangerous thing."

The moral is, use your teeth, and teach your patient how to use them. Dr. Luckey cited some evidences of disease as noted by him in prehistoric skulls he had examined.

Drs. T. T. Stellwagen, of Philadelphia, G. L. Curtis, W. M. Dailey and Louis C. LeRoy, of New York, also contributed to the discussion.

Dr. Curtis believes in raw milk for children; nuts for the adult. Foods as we use them are so adulterated as to be injurious.

Coffee is a most pernicious article of diet. Dr. Harlan in closing discussion could add but little to what he had already presented. Acids, he thinks, are a necessity for man.

Following Dr. Harlan's paper on Thursday evening was one by Dr. Chas. S. Stockton, that old "Warhorse" of New Jersey, of whose illness we wrote you in our last letter. He was unable to be present, and his paper entitled, "The Treatment of Sensitive Dentine" was read by Dr. B. F. Luckey.

Anacologen was the preparation recommended. The cavity is to be dried and the remedy applied. Warm air assists in the anælgæic effect.

Dr. Luckey in speaking to the subject said he did not believe in anæsthetizing as a general thing, preferring some pain, believing it to be a provision of nature as a guide in our operations.

Nature meant pain as a warning.

Cocaine and adrenalin was very efficacious in his hands when hyper-sensitiveness demanded the use of some drug.

At the business meeting, which occurs as the closing matter, the Society was reported in a very flourishing condition. The election of officers resulted as follows:

President, Dr. J. E. Duffield, Camden; vice-president, Dr. M. R. Brinkman, Hackensack; secretary, Dr. Chas. A. Meeker, Newark; treasurer, Dr. Henry A. Hull, New Brunswick. Executive committee,

Dr. M. R. Brinkman, Hackensack, chairman; Dr. Walter Woolsey, Elizabeth; Dr. Harvey Iredell, New Brunswick; Dr. J. G. Halsey, Swedesboro; Dr. W. A. Jacquette, Salem. Membership committee, Dr. C. H. Dills, Trenton, chairman; Dr. W. F. Naylor, Somerville, secretary; Dr. F. Rightmire, Paterson; Dr. W. H. Gelston, Camden; Dr. B. I. Rhome, Asbury Park

State board, registration and examination in dentistry, Dr. C. S. Stockton, of Newark, to succeed himself (five years).

Yours truly, "THE BOROUGHs."

AUSTIN, TEXAS, August, 1905.

THE DENTAL REVIEW,
Chicago, Ill.

Dear Mr. Editor: The honest, progressive practitioner of dentistry has some queer experiences sometimes, at least he does away down here in the Lone Star State. To illustrate: We are getting educated higher and higher in our professional ideas as we grow older, until, when we look back through the vista of our past experience, we imagine that we can see immense gold fillings in the mouths of our patients shining like gleaming miniature mountains, monuments of our past incompetency.

We read the best dental journals, and we rise to a higher, nobler sphere. We are taught that if we expect to attain success, we must conceal our patchwork, for "the art which conceals art will be the standard of the future," etc. This seems rational.

Thoroughly imbued with this idea, we procured an up-to-date Jenkin's low fusing outfit; Jenkin's, because we thought it the best to conceal our patchwork. We felt happy, because we were now equipped to repair any defects in nature's pearly white teeth without sending our patients away "looking as if they had just emerged from some jewelry establishment."

Enter Mrs. F. and daughter. "Doctor, I brought my daughter to you to have her teeth examined to see how many are decayed, and what it will cost to have them filled. I want the back teeth filled with amalgam." The young lady is a buxom maid of fourteen years. We examine the teeth carefully and find twenty-one cavities, the majority of which are in the proximal surfaces of the lower incisors and highly sensitive. The upper laterals are also decayed mesially. The

terms arranged, we were instructed to proceed with the filling. The young patient was left in our charge and we applied the rubber dam, prepared the upper laterals, and carefully filled both teeth so that not a vestige of our patchwork could be seen. We felt happy from a consciousness of having done our duty. We made appointment for the next sitting and awaited to receive the plaudits of a grateful parent. Our feelings can hardly be imagined when the lady appeared the next day with trembling lips and a look of disappointment on her face. She said: "Doctor, I am certainly disappointed in your work. Oh! I don't like your fillings a little bit. Why, you don't show your fillings and nobody can tell that the teeth have even been filled. I certainly expected the fillings to show. I'll just pay you for what you have done and get some other dentist to finish the work. Please make out my bill. I'm so disappointed." We made the bill, reserving our private opinion to place under a heading something like "Where ignorance is bliss, etc."

The other fellow prepared the young lady so that she could be readily distinguished by the jewelry-like mountings in her mouth, and we—well, we just lost out. Yours in sackcloth.—F. S. C.

PRACTICAL HINTS DEPARTMENT.

EDITED BY G. W. JOHNSON, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, THE DENTAL REVIEW, 55 State street, Chicago, Ill.]

Be Honest to Children:—Never lie to a child, for the child of today is the man or woman of tomorrow.—*Mark G. McElhinney, Ottawa, Canada.*

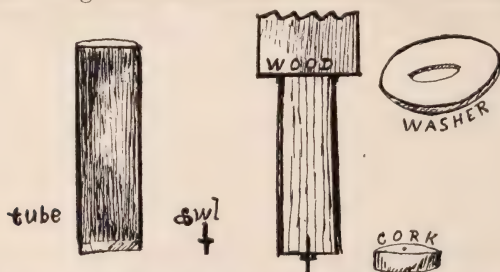
Tobacco and Alcohol:—The dentist who persists in the use of alcohol and tobacco during office hours signs a mortgage to the devil of failure and should not complain if his patients wander away to more capable men.—*Mark G. McElhinney, Ottawa, Canada.*

Troublesome Full Dentures:—The key to most of the difficulties in troublesome full dentures lies in articulation. Find and correct the peculiarity in the articulation and an otherwise useless outfit can be made a reasonably working concern.—*Mark G. McElhinney, Ottawa, Canada.*

Making Bands for Orthodontia Cases:—When making bands to retain ligatures or expansion wires pinch the band on the side of the tooth where it is desired to have the retention. After soldering do not cut the ends close. File or grind a slot across the ridge made by the soldered ends, sufficient to receive the ligature or wire.—*R. E. Sparks, Kingston, Ontario.*

Bracket Table Cover:—Having tested the value of white sheet celluloid as a cover for a table or swinging bracket, I wish to emphasize its superiority over glass or cloth. Freedom from noise when placing instruments on it and ease of cleansing if accurately fitted and fastened with thumb tacks, are two important reasons for adopting its use. Sheet mica has also appealed to me of late. By placing white paper beneath it it will appear as pleasing as the celluloid. The mica is more expensive in first cost but would last longer than the celluloid.—*Grafton Munroe, Springfield, Ill.*

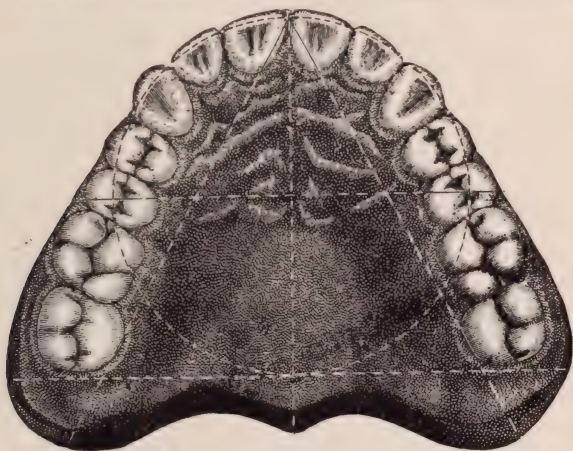
Convenient Appliance:—The country dentist living at a distance from the dental depots sometimes finds his disk supply getting low. In such cases the following construction will help him: Secure steel tubes two inches long and in diameter the size of the disks required.



Several sizes may be kept on hand. Sharpen one end of the tube and turn a hardwood stick—birch is best—to fit the tube, leaving a larger projection of three inches for a handle. A ring or washer

should be placed against the shoulder to prevent the tube sinking into it while driving. Shorten the part filling the tube one-fourth of an inch and into the center of the end drive a shoemaker's awl, ground to the size required for punching the hole in the disk and not extending past the end of the tube. Fit a cork over the awl for a compress, place the tube on the stick and the appliance is completed. Tack sheets of sandpaper, different grades, on a board and shellac them. The shellac dries in a short time and one sheet of sandpaper will make over one hundred disks.—*D. Baird, Uxbridge, Ontario.*

A Remarkable Discovery:—Many years ago Dr. Bonwill, after an exhaustive examination of a thousand or more skulls, found that the human teeth are shaped and arranged according to geometrical lines,



and that a relative proportion in width of the centrals, laterals, cuspids, bicuspid and molars exists. He also found that the six anterior teeth formed the arc of a circle, the radius of which is the width of the central, lateral and cuspid teeth.

The truth of these theories I have often demonstrated by application to sets of natural teeth when well formed and regular. A line drawn through the center of a circle thus formed, and applied to the

cutting edges of the incisors will pass through the center of the second bicuspid, and a line drawn across the posterior margin of the circle passes just back of the second molars. The application of this rule in the arrangement of artificial teeth is of much assistance to young dentists. After selecting the teeth, measure the width of the central, lateral and cuspid, make a circle of metal and apply as in the diagram. The cuspids are more prominent than the incisors, but the first bicuspids are inside the circle and never as prominent as the cuspids, a fact which is often overlooked by some dentists.

It may be well to mention another common fault in arranging teeth, and that is in dropping the posterior teeth lower than the anterior when they should be shorter and the molars slightly curved.—*L. P. Haskell, Chicago.*

MEMORANDA.

THE NORTHERN ILLINOIS DENTAL SOCIETY.

This society will hold its eighteenth annual convention at Elgin, October 18th and 19th, 1905. All dentists of northern Illinois and adjacent territory are most cordially invited to enjoy the most excellent program provided.

A. M. HARRISON, Secretary, Rockford, Ill.

FIRST DISTRICT DENTAL SOCIETY.

The twenty-second annual meeting of the First District Dental Society of Illinois will convene at Quincy on Tuesday, September 26, 1905, and extend over two days.

A fine program has been prepared, and all ethical practitioners are welcome.

J. W. MARSH, Secretary.

MINNESOTA STATE BOARD OF DENTAL EXAMINERS.

The next meeting of the Minnesota State Board of Dental Examiners will be held at Minneapolis, October 3, 4 and 5, at the dental department, State University.

All applications must be in by 12 o'clock noon, October 3.

Application blanks will be furnished upon request by

DR. F. S. JAMES, Secretary, Winona, Minn.

RECENT PATENTS OF INTEREST TO DENTISTS.

- 795,754. Dentist's tooth clamp. Robert E. Barton, St. Louis, Mo.
- 795,270. Dental obtunder. Charles A. Damon, Fenton, Mich.
- 795,494. Cutter for toothpick machines. Harry A. Dorr, Providence, R. I.
- 795,374. Head rest for barbers' chairs. Robert Stitts, Dawson, N. M.
- 796,394. Toothpick machine. Howard E. Barlow, Providence, R. I.
- 796,120. Dental matrix. Theodore Green, Ridgway, Ill.
- 796,980. Toothbrush. Robert D. Andrews, Brookline, Mass.
- 797,270. Tool for dental operations. Rudolf Dreher, Idar, Germany.
- 797,423. Toothpick. Robert R. Freeman, Nashville, Tenn.
- 797,106. Hand-operated dental tool. Charles P. Gray, Cincinnati, Ohio.
- 797,515. Metallic-backed tooth. William G. Hughes, Pittsburg, Pa.
- 797,312. Artificial tooth. Henry P. Osborn, Bayonne, N. J.

Copies of above patents may be obtained for 10 cents each by addressing John A. Saul, solicitor of patents, Fendall building, Washington, D. C.

THE MISSISSIPPI DENTAL ASSOCIATION.

The twelfth annual meeting of the Mississippi Dental Association, held in Jackson, April 19-21, elected the following officers:

President, Dr. A. B. Kelly, Yazoo City; first vice-president, Dr. L. B. McLaren, Natchez; second vice-president, Dr. J. F. Scott, Summit; secretary, Dr. E. Douglas Hood, Tupelo; corresponding secretary, Dr. W. H. Reaben, McComb City; treasurer, Dr. C. C. Crowder, Kosciusko; executive committee: Dr. W. O. Talbot, Biloxi; Dr. C. F. Boger, Natchez; Dr. E. Douglas Hood, Tupelo, ex-officio chairman.

The next meeting promises to be the best ever held and preparations are now being made for a good series of papers and some interesting clinics.

The thirteenth annual meeting will be in Gulfport, between the 1st and 15th of June, 1906. Exact date to be fixed by the executive committee.

E. DOUGLAS HOOD, *Secretary*.

PECULIARITIES OF THE LEFT SIDE OF THE MOUTH.

In our June issue Dr. L. P. Haskell called attention to seven peculiarities of the left side of the mouth, and asked if any one could account for them. As no one has responded he wishes to renew the enquiry. There must be a reason for all things, and it is natural that Dr. Haskell should wish to learn the reason for these peculiarities that he has pointed out. He admits frankly that he can find none himself. Can any one aid him? In the illustrated article, the cut Figure 4 was upside down. It was corrected in the proof but somehow slipped through.

FIRST ANNUAL CLINIC OF THE FRATERNAL DENTAL SOCIETY OF ST. LOUIS,

NOVEMBER 20, 21, 1905, AT THE BARNES DENTAL COLLEGE.

Special features of the meetings will be a series of lectures on "Cavity Preparation," "Methods and Principles of Packing Gold" and "Methods and Principles of Finishing Fillings," by Dr. E. K. Wedelstaedt, of St. Paul; Drs. A. C. Searl, Owatoma, Minn.; J. F. Wallace, Canton, Mo., and numerous other members of the Black and Wedelstaedt Clubs and other prominent men in operative and prosthetic dentistry, will give clinics. Complete program will be announced later.

All ethical practitioners are invited to be present and clinic. Please send your name and subject of clinic to the secretary. Exhibit space to be obtained by application to the secretary.

A cordial invitation is extended to the profession to be present and make this meeting limited in scope but limitless in importance, the best ever held in this section. BURTON LEE THORPE, *President*. S. H. VOYLES, *Secretary*.

Obituary.

WILLIAM TAFT.

William Taft, D. D. S., son of the late Jonathan Taft, Dean of the Dental Department of the University of Michigan, was born in Ripley, Ohio, on the 12th of July, 1843, and died on the 23d of July, 1905.

He had suffered for a number of years from locomotor ataxia, which unfitted him for the practice of his profession. About four years ago he retired to a farm near Brewster, N. Y., where he remained to the close of his life.

His general health was fairly good until within a short time of his death. Dr. Taft, twenty-five years ago, was one of the most popular men in the dental profession.

As an operator he ranked with the foremost and best known men of his day, classing with such gold workers as W. H. Atkinson, Corydon Palmer, Marshall Webb, Varney and others of this type of operators.

As a prosthetic dentist his standard was high. His ideals in this branch of the profession were men like John Allen of New York, Corydon Palmer of Warren, Ohio, and Hunter of Cincinnati, Ohio. He was a devoted friend of these men and spent a great deal of his time with them in their laboratories, especially Dr. Palmer, for whom he had an infatuation amounting to almost worship of his ability as a dentist. It was difficult to induce him to use instruments that were not made by either Dr. Palmer or himself.

One of his strongest characteristics was to subordinate and make everything secondary to efficiency. He belonged to that old school of dentists



WILLIAM TAFT, D. D. S.

who believed and practiced the theory that ten days or two weeks' work spent upon a natural tooth for its restoration and preservation was not time wasted, and throughout his life work this theory was carried into practice. He demonstrated his belief in efficiency in preparing himself for the incumbency of the Chair of Anatomy in the Ohio College of Dental Surgery. He spent seven years in the Ohio Medical College preparatory to accepting this professorship.

Dr. Taft leaves a widow and three sons, a brother and sister. The brother is in business in Cincinnati, Ohio; his eldest son, Jonathan Ray Taft, is in dental practice in Jackson, Mich. The widow and other sons are on the farm.

Dr. Taft passed from the known to the unknown in a state of coma as if in a peaceful sleep. Our loss is great. A true and devoted friend, a noble man is gone.

M. SROUT.

THE DENTAL REVIEW.

VOL. XIX.

CHICAGO, OCTOBER 15, 1905.

No. 10

DENTAL MEDICINE.*

BY J. P. BUCKLEY, PH. G., D. D. S., CHICAGO.

MR. CHAIRMAN AND GENTLEMEN:

It is not very often that I offer an apology when called upon to discuss or present a paper, but I feel that it is necessary in this instance. When Dr. Hanaford wrote me two or three months ago, and asked me to give something to the society in the form of a talk or paper along the same line as the clinic which I gave last year, I accepted the invitation, and told him that in all probability I would prepare a paper. I did not know at that time that the Illinois State Dental Society was to meet the same week as the New York State Dental Society, for which I had promised to prepare a paper, and coming with my college and other work it was impossible for me to prepare two papers.

I have therefore decided to give you a few prescriptions and a talk, as I was asked to do. The gentlemen appointed to discuss this paper, I am sorry to say, have not had an opportunity to become acquainted with the topics under consideration.

I desire to call your attention to a few practical prescriptions, and in doing so it is my intention to emphasize the pharmacy involved in the combination of these various drugs, as well as to describe their dental and therapeutical application.

R	Menthol,	gr xx
	Chloroformi,	f 3 j
	Etheris,	f 3 ss

M. Sig: Use as directed.

*Delivered before the Illinois State Dental Society, Moline, May, 1905.

The first prescription is one that you can use for obtunding sensitive dentine. It is not a panacea for all ills. It will not completely de-sensitize all dentine, but in large cavities where there is an extensive area involved, and where the dentine is extremely sensitive, you can take a little pellet of cotton and place it, saturated with this liquid, in the cavity, after the rubber dam is adjusted, and you will find by the time you are ready to excavate the dentine that these two extremely volatile liquids, ether and chloroform, have volatilized. The value of this remedy depends largely upon the volatilization of these fluids. No solid can turn to a liquid, and no liquid to a gas unless it does it according to a certain law in physics by extracting a certain amount of heat. As these two liquids are volatilized there is abstracted from the tooth structures a certain amount of heat, and that volatilization drives the menthol into the decayed dentine. You can not remove the decay painlessly in all instances, but you will be surprised to find at times how painlessly you can remove it after you use this remedy.

I would like to say something here about the objections to the use of pressure anæsthesia for obtunding sensitive dentine. I will not do that, however, because of the discussion we would get into.

R	Acidi arseniosi,	3j
	Cocainæ hydrochloratis,	gr xx
	Menthol,	gr v
	Lanolini,	q.s. to make a stiff paste.

M. Sig: Use the desired quantity.

While I do not use pressure anæsthesia for the purpose of painlessly excavating the cavity, I do use it for extirpating the pulp tissue. In certain cases, however, it is necessary to use arsenic. I believe arsenic has served us too well and too long to throw it aside.

In this prescription you will find arsenious oxide as the base; cocaine hydrochlorate—a local anæsthetic that is put in the prescription for the purpose of controlling the irritating action of the arsenic. Menthol is also added, and these three powders, made into a paste by using lanolin. The action of the remedy will depend largely on the way it is put up. If the druggist understands his business he will know that menthol is a highly deliquescent substance, and since the water in the lanolin is sufficient to liquefy the

menthol, it takes very little lanolin to make a nice paste out of arsenious oxide and cocaine hydro-chlorate.

PUTRESCENT PULP REMEDIES.

Now I come to the discussion of remedies to be used in the treatment of putrescent pulps and abscesses with some satisfaction. Until recently drugs have been selected and used in the treatment of these conditions absolutely empirically. There is a tendency in dentistry and medicine at the present time to apply therapeutics along rational lines. We are not satisfied to know that we get a certain result, or that by using certain drugs we produce a certain result. We are anxious to know now why that result is produced. I believe that we have the treatment of putrescent pulps and blind abscesses put upon a rational basis. In order to have you understand this thoroughly I must digress just enough to call your attention briefly to the chemistry involved in the decomposition of pulp tissue. Pulp tissue is supposed to be composed of proteids, carbo-hydrates and fats. There are some men in our profession who do not believe there is any fat in the original pulp tissue. I know men in Chicago who do not believe that there is any carbo-hydrate in pulp tissue. If we accept these opinions that there is no fat on the one hand, and that there is no carbo-hydrate on the other, we must conclude then that pulp tissue is all proteid or albuminous material. Personally, I can not accept these statements.

This is the point I want to make, that whether there are fats present in the original pulp tissue or not, in the treatment of putrescent pulps we have to take into consideration the presence of fatty compounds, because chemists have proved conclusively that in the decomposition of this albuminous material fat is one of the end products.

R Formalini,
Creasoti,
Alcoholis,

a a f 3 j
m xx

M. Sig: Use as indicated.

Now you can get excellent results in treating putrescent pulps if you will use the first formula under this heading: Formalin and creasote, equal parts, to which alcohol is added. You will see in some journals the suggestion that you can use equal parts of formalin and creasote, but if you know anything about pharmacy, or if

you have tried to mix them you know that they will not make a clear solution; but we can add alcohol to this mixture for the purpose of clearing up our solution (illustrating).

Some journals have suggested that you take equal parts of formalin, creasote and alcohol. Alcohol is only added for the purpose of making clear the solution, and all that is necessary is to take enough alcohol to clear up the solution. I find that for a drachm, approximately, of the formalin and creasote 10 minims of alcohol will be sufficient.

R Formalini,

Tricresol,

a a f 3j

M. Sig: Use as indicated.

The second formula for the treatment of putrescent pulps is formalin and tri-cresol. I believe that we are indebted to Dr. MaWhinney for suggesting the use of tri-cresol to the profession,—either Dr. MaWhinney or Dr. Cook. Tri-cresol you can get absolutely colorless, just as this sample is, but it is hard to get. Most of the specimens are colored. It is like carbolic acid, inasmuch as exposure to the air and light for any length of time will cause it to become colored. If you take tri-cresol and formalin in equal parts you will have a better remedy for treating putrescent pulps than creasote and formalin for three reasons: First, tri-cresol and formalin are miscible in all proportions. You will think at first that they are not going to mix, but by simply shaking the test tube they make a clear solution (illustrating). Without the addition of any alcohol these two drugs will mix in all proportions. That is one reason that I prefer tri-cresol to creasote in the treatment of these cases. The second reason is that tri-cresol is a much better disinfectant than the creasote. It is three times as good a disinfectant as carbolic acid. In the past drugs have been selected and used in the treatment of putrescent pulps only because of their ability to inhibit the growth of micro-organisms, or to kill germs. There are many other things, such as irritating gases and poisonous ptomaines that are formed in the root canal, and it is as necessary to dispose of these substances chemically as it is to kill the germs. This remedy will kill the germs, and also dispose to advantage of the byproducts of the decomposition. The third reason, and the most important one for selecting tri-cresol instead of creasote, is because I believe this agent acts chemically upon the fats. If you

can select a remedy which can be hermetically sealed within the tooth, you are all the more happy for several reasons. Hermetically sealing a remedy keeps the saliva from contaminating the medicine and prevents the medicine from contaminating the saliva of the patient's mouth. We have still another advantage, as by so doing we prevent the tooth from changing color, provided, of course, we have the tooth to treat before it has become discolored. It is the formalin that gives us the advantage of hermetically sealing this remedy, because, from this mixture is generated formaldehyde gas, and the two main gases that are formed from putrescent pulps are ammonia and hydrogen sulphide. If gas accumulates pressure would be produced, and this would force some of the poisonous ptomaines through the apices of the roots. These ptomaines have been proved capable of setting up inflammation and suppuration. If you use this remedy, which generates formaldehyde gas we know why we can hermetically seal the cavity. The two gases, formaldehyde and ammonia, come in contact with each other and there is formed urotropin, which is used in medicine to disinfect the urinary tract. We don't care so much about that as we do the fact that we can have this gas from our remedy come in contact with the gas within the tooth, and we can change it into a *solid*. Then the same gas, formaldehyde, will come in contact with one of the other gases, hydrogen sulphide, and it will convert it into wood alcohol and sulphur. If you can convert the two main gases, NH_3 and H_2S , found in a putrescent canal, into *solids and liquids*, you can hermetically seal the tooth and have your patient go home happy.

The tri-cresol acts to advantage upon the fats. It is my belief that lysol, or something resembling it, is produced by chemical action of tri-cresol upon the fatty compounds. This belief has been brought about because of the fact that lysol is practically a solution of cresols in fats. There are three cresols, ortho, meta and para, and a mixture of these three cresols is what is known as tri-cresol, now recognized by the U. S. P. of 1900 as *cresol*. This is what I have used in combination with formalin to get this so-called rational treatment for putrescent pulps. The value of formaldehyde here depends upon the power the gas has of uniting chemically with mephitic gases. When you haven't these gases present to any extent formaldehyde is contra-indicated in this strength solution. I know

this remedy is being used everywhere. It should not be. If you have the teeth treated, and have disposed of these gases that come from a putrescent pulp, then this remedy has no business there. In that case you can use your tri-cresol alone, or you can use most anything after you have disposed chemically of the gases. Dentists should not expect to find one drug, or one remedy which can be used in every case all through their practice. This remedy has been used where it is contra-indicated. It is indicated only where you have these gases to contend with.

R	Formalini.	f 3 j
	Tricresol,	f 3 ij

M. Sig: Use where indicated.

If you have not much of these gases you can modify the formula, and the modified formula would be two parts of the tri-cresol and one part of formalin.

R	Potassii iodidi,	3 j ss
	Syrupi sarsaparillae comp.,	f 3 ij

M. Sig: Take a teaspoonful in water after meals.

In treating these chronic abscesses, and sometimes in treating pyorrhoea alveolaris Dr. MaWhinney referred to the fact that it is necessary to give potassium iodide. A good prescription for potassium iodide, wherever you want to use it, is given here, which was written with the idea in view of aborting an abscess. If the patient did not come to you until the putrescent material had been forced through the end of the root, you would open up into the pulp chamber, treat as usual, and then prescribe this alterative mixture of potassium iodide. The compound syrup of sarsaparilla is preferred to other vehicles for several reasons, one being that it is a pleasant syrup to take. The compound syrup of sarsaparilla contains extract of senna, which is a laxative, extract of liquorice—a stomachic, and extract of sarsaparilla, a tonic; also the oils of anise, sassafras and wintergreen. In addition to having a tendency to mask the nauseating taste it also, as you see, has therapeutic properties, all of which would be useful in this particular instance. Instead of giving the medicine before meals, as is the general rule, you should prescribe this on a full stomach. Add a teaspoonful to half a wineglass of water, and have the patient take it after meals. General directions would be to take a teaspoonful three times a day, but in these cases of incipient

abscesses you should have the patient take a teaspoonful every two hours until three doses are taken, and then follow the directions written on the label.

R Liquoris magnesiæ citratis, f 3 xij

Sig: Take one-half at once and the remainder in two hours, if necessary.

One of the things that should be avoided in treating these conditions is the accumulation of blood in the part. I call your attention to this prescription for two reasons. It is an example of a saline cathartic, and saline cathartics are indicated especially where we are trying to abort the formation of an abscess. Then, besides being a saline cathartic it is an example, also, of an official preparation and illustrates how a prescription should be written for an official preparation. From experience behind the prescription counter and my privilege of looking over the files of druggists, and seeing how slipshod many prescriptions are written by dentists, it seems to me necessary to mention this. In writing a prescription for Dover's powder, for instance, another official preparation often used by dentists, all you would have to do would be to say: R Pulveris opii et opæ-cacuanhæ.

R Thymol.	gr ij
Menthol,	gr iij
Eucalyptol.	f 3 j

M. Sig: Use as directed.

Now, after you get these abscesses treated, or after you have removed the pulp by pressure anæsthesia, or by the use of arsenic, it is necessary to fill the canal. In performing this operation a good many of us believe that gutta percha has served us too long and too well to be discarded. Those of you who think that there is virtue in gutta percha as a root canal filling, and who are in the habit of using eucalyptol can get better results if you will use this formula. Eucalyptol is used because it is a slight solvent for gutta percha. There is a difference between eucalyptol and oil of eucalyptus. If you use the latter, you will have a beautiful case of pericementitis every time. Oil of eucalyptus contains three constituents, one of which is eucalyptol, which distils over first because it is the most volatile of the three. Eucalyptol, while it is not as irritating as the oil of eucalyptus, still it is irritating. By adding thymol, which is a disinfectant, and

menthol, a local anæsthetic, you can modify the irritating properties of eucalyptol, as well as enhance its disinfectant power.

℞ Tincturae aconiti (rad), f ʒ j
 Chloroformi, f ʒ iv
 Menthol, gr xx

M. Sig: Use in cases of pericementitis and facial neuralgia.

Sometimes in using the eucalyptol preparation, if you should use a little too much or don't use care and judgment you may have a case of pericementitis to treat. In that case, instead of using equal parts of tincture of aconite, tincture of iodine and chloroform, you get excellent results by using this prescription.

℞ Acetanilidi, gr x
 Syrupi simplex, f ʒ ss
 Spiritus frumenti, q.s. ad f ʒ iij

M. Sig: Take one-half at once and remainder in two hours, if not relieved.

In treating neuralgia, or in an incipient abscess, where there is severe pain, you can give this prescription. There are three members of the anti-pyretic group—antipyrine, acetanilide and phenacetine. The last two named are insoluble in water, but soluble in alcohol. If you wanted to give one of these analgesics dissolved in water you would have to select antipyrine because the other two are insoluble in water. If you were not particular about your vehicle being water, and you wanted to use alcohol, or the natural spirits, then you could take acetanilide or phenacetine. If you don't care to make a liquid out of this prescription you could give acetanilide or phenacetine in the form of a powder. This is something about the physical properties of these drugs that you have to take into consideration in prescribing them.

℞ Phenacetini.
 Salophen, aa gr xx
 Fiant chartulae No. 4.

Sig: Take one powder every two or three hours as required.

Until this afternoon I did not know that pyorrhoea alveolaris was of purely local origin. If I had known that before I came down I would have left this prescription at home. It seems like we get good results in treating pyorrhoea and neuralgia oftentimes when we believe

that the neuralgia or pyorrhoea is associated with the uric acid diathesis, when we give some drug systematically. Salol had a great reputation at one time. It broke up in the intestines into salicylic and carbolic acid. The carbolic acid is irritating. Solophen is a substitute for salol and breaks up into practically non-irritating substances. It is one of the salicylic compounds from which we can get salicylic acid.

Here we have an example of a prescription for powders. I selected it for this purpose especially, because you will notice the form of some of these prescriptions are liquids, others powders, some ointments, and some pills. I tried to give you one example of the four general forms in which prescriptions are generally written, liquids, ointments, powders and pills.

Not all, by any means, of these prescriptions are original with me. I collected them, with many others, from various sources, some from medical, dental and pharmaceutical journals, and some from friends of mine.

R Quininae valerianatis,	gr xv iij
Extracti hyoseyami,	gr iv
Extracti cinchonae,	gr v iij
Fiant pilulae No. 12.	

M. Sig: Take one pill before meals and on retiring.

I believe I found this prescription in *The Cosmos*. I have modified it somewhat. It is for neuralgia due to or associated with malaria, especially beneficial in the spring of the year.

I would like to say something in connection with the prescription for powders above which I almost overlooked. You notice that I have written the prescription for four powders only. If you write a prescription for twelve or twenty, and the patient feels that one is good he might think that a good many will be better. Instead of following your directions he is apt to take one right after another until relief comes. In neuralgia oftentimes patients are not accountable for what they do, and regardless of the probable effect they might take an overdose of some drug. You can avoid that danger by not prescribing enough of the drug to produce any very severe toxic effect, even though the patient takes all you prescribe. If they should take the entire four powders in this instance it probably would not produce any marked

ill-effect. We, as dentists, possibly feel that we ought to take extra precaution in prescribing.

R	Zinci iodidi,	gr xv
	Aquae,	m x
	Iodi (crys),	gr xxv
	Glycerini,	f 3 j

M. Sig: Use after scaling roots in a pyorrhoeal pocket or on flabby gum tissue.

Here is an astringent mouth mixture suggested by Dr. E. S. Talbot of Chicago. This formula was worked out for him by Dr. C. N. S. Hallberg. You can not dissolve iodine in water to any great extent, but if you dissolve potassium iodide in water, then that solution would take up a certain amount of iodine. This is the idea upon which Dr. Hallberg has worked out this formula.

R	Potassii chloratis,	3 ij
	Sodii biboratis,	3 j
	Potassii nitratis,	3 ss
	Tinturae arnicae,	3 ij
	Aquae cinnamomi,	q.s. ad 3 viij

M. Sig: Thoroughly rinse mouth three times a day.

Here we have an astringent mixture for use as a mouth wash. Some prescribe rose water as the vehicle, but rose water makes a mouth wash taste like hair oil. You can substitute cinnamon water and overcome this. Some claim that arnica is used only because of the alcohol it contains. You can substitute for the tincture of arnica the tincture of calendula.

R	Sodii bicarbonatis.	
	Sodii biboratis,	aa 3 j
	Zinci chloridi,	gr vj
	Thymol,	
	Menthol,	aa gr j
	Glycerini,	f 3 iv
	Alcoholis,	f 3 ij
	Aquae gaultheriae,	q.s. ad f. Oj

M. Sig: Use as a mouth wash.

Here we have another astringent mouth wash. In this prescription we have drugs that are insoluble in water,—menthol and thymol. It is necessary, if your vehicle is going to be water, to put in a little

alcohol, glycerine, or both to dissolve the substances that are insoluble in water.

R Europhen,
Orthoform, aa 3 j
Petrolati liquidi . q.s to make thin paste.

M. Sig. Apply to abraded surfaces.

Here is a prescription that Dr. MaWhinney, with the exception of the vehicle, suggested to the Illinois State Dental Society two years ago. Equal parts of orthoform and europhen. The doctor suggested mixing these drugs together, and as they are both insoluble in water they can be packed down into a socket from which a tooth has recently been extracted. Wherever you have an abraded surface it will stop pain like magic.. You do not need to write this prescription. You can take these two powders and mix them with oil, all three of which are insoluble in water. Wherever you have an exposed surface dry it, put this oleaginous mixture on it and then the water from the saliva will be thrown back because water and oil are physically incompatible.

R Cocainae hydrochloratis. gr v j
Acidi carbolici, m ij
Aquae menthae piperitae. q.s. ad f 3 j

M. Sig: Use as a local anaesthetic hypodermically.

Now if you feel like paying \$1.50 for a local anaesthetic, the constituents of which you don't know, or if you feel like paying fabulous prices for putrescent pulp mixtures, the constituents of which you do not know, you may do so, but if you don't feel justified in doing that you can use this local anaesthetic formula which I suggested, which is a modification of other formulas I have seen. My vehicle is peppermint water, because it contains enough menthol to mask the bitter taste of cocaine. Most of these local anaesthetics are bitter. Peppermint water is not strong enough, however, to keep fungus growths from forming in this solution, so we can add a disinfectant, carboic acid, for the purpose of keeping sterile our solution. I have prescribed only one ounce, and if I have freshly prepared peppermint water with the acid used this solution will keep sterile for the length of time it takes me to use one ounce of the fluid. The thing I want to call your attention to here especially is that in nineteen minims of this solution there is contained one-

quarter of a grain of the alkaloidal salt. We are justified in injecting into the system, at one time, one-quarter of a grain of cocaine. You may not always do this, but in some instances you will. That does not mean that in this prescription you can use only nineteen minims, as you always waste some in trying to get the air out of the syringe, and the tissues are also apt to bleed. You can use perhaps fifty minims, or two syringefuls without even getting one-quarter of a grain into the system.

If I should be so unfortunate as to have a patient die from using cocaine I would a thousand times prefer to have the prescription on record in the drug store, so that I can say that I used a syringeful of a certain anaesthetic, the constituents of which I knew, and also knew the exact amount of cocaine that was contained in the fluid used, than to say that I used Dr. Smith's Celebrated Local Anaesthetic, the amount of cocaine in which I did not know. Cocaine is one of our most useful drugs. Use it we must. We want to know how to use it, and the exact amount that we are using.

I am exceedingly sorry that I have had to hurry over this matter, and present it in the rambling way in which it has been presented, but I am very grateful for the attention this society has given to me.

COMPRESSIBILITY OF PLASTER OF PARIS.*

BY J. H. PROTHERO, D. D. S., CHICAGO.

During the past two years the writer has endeavored to emphasize the fact that warpage of plaster models, due to expansion, is one of the frequent causes of imperfect adaptation in constructed dentures.

The object of this paper is to call attention to another physical property of plaster, viz., compressibility, which is a source of error equally as potent as the first mentioned, and which is too often overlooked, or possibly not recognized by the prosthetist.

When a case has been flaked and packed with vulcanizable rubber, it is usually placed in boiling water for a few minutes, then subjected to pressure in a press or by means of the flask bolts until the two halves of the flask are brought into close contact with each other.

Frequently an excessive amount of rubber has been introduced.

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which must find its way into gates cut to receive it, be forced out between the surfaces of the plaster in the two parts of the flask or make room for itself in the plaster as a result of the heavy pressure exerted in closing.

This latter condition is often observable after vulcanization when on opening a case a layer of excess vulcanite of greater or less thickness will be found interposed between those surfaces of plaster in the two halves of the flask, that previous to packing could be brought in close contact. This proves conclusively that compression of the plaster has occurred and verifies the old axiom that no two bodies can occupy the same space at the same time.

Since compression has occurred over areas not originally covered by rubber in packing, it is self evident that compression to a greater degree has occurred on the model and the surfaces of the matrix opposite, because the first and greatest pressure exerted in closing the flask is directed against these surfaces.

Vulcanizable rubber, while more or less plastic at the boiling point of water, is somewhat sluggish in its movement and requires considerable time to make its escape when in excess and under pressure.

As before stated, pressure, when applied to a packed flask, is first confined solely to the face of the model and the immediate opposite surfaces of the matrix.

If the packing has been carelessly accomplished and several thicknesses of rubber are placed one on the other in the palatine portion of the model or in other locations where not required, as frequently occurs, those areas of the model suffer most because subjected to the greater pressure for the longer period.

Let us for a moment consider the amount of actual force used in closing a flask. The force of the screw is calculated by the following formula.

The power is to the weight as the distance between two contiguous threads is to the circumference of the circle described by the outer end of the lever at the point of application of force.

Take, for instance, a flask wrench four inches long and a flask bolt with twenty threads to the inch.

Let the pressure applied to the end of the handle be 5 lbs., then the formula will be expressed as follows :

5:x:1-20:3.1416x8. Multiplying the extremes together and dividing by the mean, we find the other mean equals 2513.28, taking off one-third for friction, the remainder, 1675.52 lbs., represents the actual amount of force exerted on the contents of the flask.

As a matter of fact some flask wrenches are 5½ inches long, while usually more than 5 lbs. pressure is exerted by the hand in manipulation, both of which conditions together, or either one separately, will increase the amount of force applied.

Now let us see what force is exerted by the screw of the flask press. These appliances are usually fitted with a 12-thread screw and a double handle, ranging from 8 to 12 inches in length over all. They are designed to be screwed to the laboratory bench or set in a base that will prevent rotation of the press when in use.

This leaves both hands of the operator free for the application of force, and it is safe to say that at least 20 lbs. pressure is applied under ordinary conditions.

To illustrate, we will take three presses with double handles, 8, 10 and 12 inches in length, respectively.

Applying the formula before mentioned, the following results are noted.

Handle	Screw	Pressure	Force less friction	Total force
8 inches	12 threads per inch	20 lbs.	2680.83	4021.24 lbs.
10 inches	12 threads per inch	20 lbs.	3357.04	5026.56 lbs.
12 inches	12 threads per inch	20 lbs.	4063.91	6095.91 lbs.

Surely such enormous pressures as are here indicated must occasionally at least produce some change in the surfaces of models, and as a result, account for some of the poorly adapted dentures we so often see.

It is true that in most cases the plaster model on which the waxed case rests is harder, dryer and more thoroughly seasoned than the plaster constituting the investment of the case.

It may even be capable of resisting heavy pressure for a time without distorting.

The compressed rubber, however, maintains pressure in all directions in the matrix long after the initial pressure of closing has been removed, and during vulcanization the moisture permeates every part of the model and investment as well, especially if the flask is immersed under water, thus rendering the plaster softer and more compressible,

While distortion of the model may not occur in some cases during the closing of the flask, it is liable to occur during the process of vulcanization, if an excessive amount of rubber is used.

We will now sum up in a few words the ground previously covered. Plaster of paris is capable of being compressed. Enormous pressure, far more than is necessary to compress plaster, can be produced by the appliances used for closing flasks. Vulcanizable rubber, when heated to 212° F., does not flow rapidly. Therefore, if an excess of rubber is present and the case is closed rapidly under heavy pressure, distortion of some portion of the matrix will very likely occur.

A few suggestions as to how this error may be avoided are in order.

- (1) Use a good quality of plaster for both model and investment purposes.
- (2) Manipulate it so as to secure the greatest density with least expansion.
- (3) Cut waste gates large enough to receive the excess of rubber and connect them with the peripheral margin of the matrix.
- (4) Avoid the introduction of a large excess of rubber, using interposed muslin and separating the case to determine the correct quantity.
- (5) Heat the case gradually and uniformly, preferably by dry heat.
- (6) Apply pressure slowly, allowing ample time for the rubber to find its way into the waste gates, reheating the case if necessary.
- (7) Place the flask above the water in the vulcanizer so that the vulcanization may occur in the steam and not under water, to prevent softening the plaster.

In order to study this as well as other physical properties of plaster of paris, the writer has constructed a micro-dynamometer for noting the amount of compression which results from the application of a definite amount of force.

This instrument will be presented at a table clinic to demonstrate some of the facts here stated.

REPORT OF COMMITTEE ON DENTAL SCIENCE AND LITERATURE.*

BY E. H. ALLEN, D. D. S., FREEPORT.

In presenting this report as the Committee of Dental Science and Literature, of what has been done during this past year, I might sum it all up by saying that while the work of progress has been large, it is not so much more than the preceeding year as to attract any special attention.

No new or startling thing has been brought out, but the advancement and development along the lines of work that occupied the attention of the dental profession the year before last has in this last year been considerable.

The Fourth International Dental Congress which met at St. Louis last year was, perhaps, the most remarkable gathering of our profession ever held. The papers read were of great scientific importance and were ably discussed. The clinics were ordinary. This should not be construed, however, that they were not of a high class, but clinics nowadays are generally of such a high standard that a clinic must indeed be of very high order to be more than ordinary. The proceedings of this meeting make an important addition to our dental literature, and you are particularly urged to read them carefully.

It was a thing of regret to learn that the dental colleges receded from the stand for a four-year course for graduation for dental students. It seems like a step backward, but the change from four to three years seems to have been necessary in the interests of harmony in the faculties' association.

From a study of the historical facts, concerning the course of study in reference to length of time, etc., it seems that the act of recession by the faculties' association was a concession by the stronger colleges to the weaker ones in order to save the association. In these actions the Examiners' Association was not consulted, so they asserted their independence and refused to accept the reduction of time for each course of lectures to eight months. The examiners notified every school separately that they *must* teach so many months

*Read before the Illinois State Dental Society, Moline, May, 1905.

before graduation. They may teach four years of seven months each or three years of nine months each, as they please. Furthermore, the Examiners' Association demanded that the entrance requirement should be graduation from a standard high school, or its equivalent. The foregoing requirements, to take effect in 1906, must be met before the schools are recognized by the Examiners' Association. This is the situation at present, and the Examiners' Association should receive all praise for the stand they have taken. You will see that they have raised the educational requirement from two years in high school to graduation in same, in order to matriculate.

Any dental society the size of the Illinois State Society can and should publish its own proceedings. They have been farmed out to a dental journal for publication in its monthly issues and strung out through the whole year, and at the very last month before the time for the next annual meeting the volume of proceedings has been sent out. If the proceedings are worth anything to us, they should reach the members not later than the first of October following the May meeting. This committee recommends that our society publish its own proceedings and that the committee on publication be empowered to take proper steps to that end.

The inlay question still holds as prominent a place before the profession as ever. I think gold inlays for the bicuspid and molars are now thought to be better than the porcelain inlays. But the porcelain inlay for any cavity that is at all conspicuous is the proper thing, providing a sufficient body of porcelain can be used to afford a "reasonable amount of edge strength." Also here in the West the low fusing body is coming into more general use than a year ago for a class of cavities not requiring any amount of contouring.

Mr. Robt. Brewster has introduced a white opaque body for lining matrices, in order to overcome the shadow produced by the cement. This is a decided advance over anything heretofore used. It is a high fusing body. Dr. Roach has produced a porcelain cement which is mixed like cement filling, placed into the cavity, built to contour, then removed and baked. I do not know that this has been placed on the market.

The inlay question, as a whole, is very important, the development of which is very interesting. The progress toward better results has been steady, one might say rapid. It seems that just a word of

warning may well be sounded in connection with the inlay question, and that is that there seems to be in the minds of some of the writers on this subject a tendency to cut away too much tooth structure in order to make a porcelain inlay. The cutting advocated by the extension for prevention adherents is less extensive than advised by some of the inlay men. The best paper and discussion on this subject during the past year appeared in THE DENTAL REVIEW for September. Paper by Dr. C. N. Thompson, discussed by Drs. Taggart and Reeves.

The meeting of the orthodontia people at Buffalo about a year ago was a successful one and productive of much good along those lines of work. A very good account was published in the various journals, particularly in the "Items of Interest." A careful reading of the proceedings of this meeting will be of great value. Probably this subject received more attention this past year than any previous year.

Oral Surgery.—In the current literature on this subject there are numerous cases reported that are interesting and instructive. Attention is called to reports of John B. Murphy, A. M., M. D., of Chicago, on "Osmic Acid Injections for Relief of Trifacial Neuralgia," see *The Journal of the American Medical Association*, October 1 and 8, 1904, Vol. XLIII, Nos. 14 and 15. Dr. Gilmer reports a very interesting case of multiple fracture of the lower jaw, complicated with double fracture of the upper jaw.

Cement.—Attention was directed to the cement problem by the paper of Dr. Poundstone, read before our meeting last year. This has led to further investigations, which will without doubt result in a more definite scientific knowledge of cements and their action while hardening or crystalizing.

Roentgen Rays.—Attention is directed to the use of Roentgen Rays in the study of internal anatomy of face. Though this is not new in a general way, the field of application has been widened during the past year by investigators, especially by Prof. M. H. Cryer of Philadelphia. See proceedings 4th I. D. C.

Pathology.—Studies of the saliva, in its relation to bacteria and caries of the teeth, have occupied the attention of investigators, and Dr. W. D. Miller, of Berlin, read a paper at the International Dental Congress. Dr. George W. Cook, of our own society, has also been making experimental studies of this subject.

Operative Dentistry. Nothing unusual has occurred the past year. The current literature on this subject indicates that the opposing factions over "Extension for Prevention" are getting nearer together as they more clearly understand the principles as laid down by Dr. Black.

Prosthetic Dentistry.—Perhaps the most important work going on in this line the past year is the investigations on the setting of plaster of paris and the control of the expansion and the strength of plaster under pressure, as this concerns the foundation work in all phases of this subject.

Literature.—The most representative literature we have today is that found in the dental journals. The literary merits of the papers published are growing better, which shows that the members of the profession are reading more, and of a general character, and that is what we need.

The books represent the maturer thought of our dental literature. The journals represent that which is springing up from time to time. That which is good survives, and becomes after a greater or less time, a part of a book.

The number of books has averaged that of preceding years, so far as I have been able to learn. The following are a few of them: Jackson's Orthodontia and Orthopedia of the face; Talbot's Irregularities of the Teeth; Dental Pathology and Therapeutics, H. H. Burchard; Gorgas' Dental Medicine; Oral Pathology and Therapeutics, Elgin MaWhinney; Practical Therapeutics, J. P. Buckley; Essig's Dental Metallurgy, edited by Koenig.

There have been many other books of merit. I find the subject too large for anything more than a mere touching on the important points as they have appeared to me, and I regret that I have without doubt omitted many things, but such as I have I respectfully submit to you.

REPORT OF COMMITTEE ON DENTAL ART AND INVENTION.*

BY DR. J. H. PROTHERO, CHAIRMAN, CHICAGO.

The committee on dental art and invention herewith presents the following report of such new appliances as have been brought to their notice during the past year.

The patents issued during the last twelve months on various appliances equal in point of numbers those of previous years, viz., seventy-five.

The Garhart Dental Manufacturing Company have recently introduced an electrical furnace, very compact in form, in which the rheostat is placed above the muffle and immediately in connection with it, thus diminishing the loss of heat by radiation, as well as reducing the size of the furnace. It is suitable for cases of limited size only, on account of the small size of the muffle it carries.

H. D. Justi & Son present several new appliances, among which are a common sense mandrel, carrying a small cone shaped cap which fits the end of the hand piece and prevents the ingress of saliva.

A new tooth made of their standard tooth body, with the pins composed of a new alloy, called nicollett, which it is claimed is stronger as well as cheaper than platinum. A new adjustable angle hand piece capable of being set in eight different positions.

Beutelrock's pulp canal reamers for reaming pulp chambers and root canals. Also Ranche's plate retainers, consisting of a soft rubber disk, which is attached to a finished denture by a gold collar, which, during vulcanization, is attached to the palatine portion of the denture. It is claimed that these disks increase the adhesion of the denture to the tissues.

The S. S. White Dental Manufacturing Company present an exhibit of twenty-eight cases of various appliances among which may be mentioned as most important a set of eleven inlay burnishers and instruments and an inlay carver designed by Dr. O. M. LeCron.

Platinum fusing pans and fireclay slides in several sizes for porcelain inlay, crown, bridge and continuous gum work.

S. S. White foundation bodies in four colors to be used for the

*Read before the Illinois State Dental Society, Moline, May, 1905.

first baking in porcelain work, and which fuse at a higher temperature than the regular porcelain bodies.

Biscuited technic teeth and technic tooth moulds for the use of beginners in porcelain work.

A pair of tooth pin bending pliers, whereby the pins of teeth can be bent without putting strain upon the porcelain. An improved form of cap crown splitter in which the cutter blade is adjustable and held by a screw.

Vulcarbo disks and points in which carborundum is substituted for corundum in the well known rubber appliances of these forms.

A double end cone socket handle of mahogany tipped with neat nickel plated ferrules for small shanked instruments.

A broach holder and a set of contour matrices designed by Dr. Crenshaw.

A celluloid handled tooth brush in which the bristles are imbedded in the celluloid under pressure, while the latter is in a plastic condition, thus holding them firm and preventing the ingress of moisture. They come in various colors.

An inlay cement spatula with short, stiff blade, suitable for mixing small amounts of cement and permitting the use of the required force in so doing.

A set of universal scalers, designed by Dr. B. L. Thorpe, which can be used as chisel or hoe instruments. A line of carborundum products of their own make in various grits. A new double action automatic mallet, lighter than most instruments of this form, having six lengths of stroke, and capable of delivering light or heavy blows as desired.

The Consolidated Dental Manufacturing Company presents a pair of plate shears, which will cut curved as well as straight pieces of metal with equal facility.

Frink & Young present three items: A flame guard and annealing tray combined; an aluminum handled tooth cleanser, with felt and rubber pads substituted for bristles; and a large ball-bearing castor, suitable for use on heavy dental furniture.

Dr. J. W. Ivory presents several new appliances, among which may be mentioned new forms of clamps, a matrix holder and a small pointed two-jawed instrument for removing obstructions from root canals.

Dr. Allen, of Toledo, Ohio, has invented an engine mallet for use on the slip joint cable, which is shorter than a regular hand piece and capable of delivering a very light or very powerful blow.

Dr. J. M. Miller, of Cadillac, Mich., has invented an electric mallet, which he claims is compact, simple and easily controlled.

Dr. E. C. Moore, of Elgin, Ill., has designed an instrument sterilizer and hot water heater.

The Ritter Dental Manufacturing Company have placed on the market a new cord engine, which does away with the rigidity of the arm of the ordinary cord engine. They have also perfected an alternating motor lathe capable of running at different speeds, with ample power on each speed.

The Brewster Dental Company are introducing a low fusing porcelain, capable of being used in conjunction with a pure gold matrix; also an inlay matrix lining for overcoming the shadow problem caused by cement.

Dr. Underwood, of Elgin, Ill., presents an engine safety gum lance, which appears to be a very convenient appliance for the purpose intended.

The Johnson & Lund Dental Company have recently placed on the market a tooth with alloy pin, which they claim is stronger than platinum as well as less expensive.

The Garhart Dental Manufacturing Company offer a new pyrometer in connection with their latest design of furnace, that it is claimed will positively indicate the exact fusing points of the various bodies.

Dr. F. E. Roach, of Chicago, also has something new in this line to offer, but on account of lack of time, your committee can not give a description of it. Dr. Roach will present the apparatus in the clinics tomorrow.

Dr. A. E. Matteson, of Chicago, presents a new electric furnace, which consists of a battery of three furnaces of different sizes, arranged upon one rheostat, so that the current may be thrown into either furnace as desired. The muffles are German hard porcelain, very thin, the wiring on the outer surface. These muffles can easily be withdrawn from the outer casing, repaired or rewound and again repacked by the dentist, and have porcelain doors with peep holes, the larger having a door with a wired chamber, thus surrounding the entire inner surface with the electric current.

Dr. J. Austin Dunn presents a new cervical clamp, so constructed that it will adapt itself easily, regardless of shape or size of the tooth, and will not slip readily.

For the benefit of the committee which shall succeed this one, and in order that its report may be full and complete, we would solicit for it the hearty co-operation of every member of this society in sending details as far as possible of every new invention and design of merit that may come to their notice, to the chairman of this committee. By so doing a fuller and more complete report can be rendered and the interest in it greatly enhanced.

ADVERTISING IN DENTISTRY; OR, COMMERCIALISM VERSUS PROFESSIONALISM.*

BY G. H. HENDERSON, L. D. S., D. D. S., SPRINGFIELD.

In the early days of dentistry very little was known of what is now a noble profession. A few tools in a grip comprised the outfit of those who made a living in that way. According to the general opinion, dentistry was a trade, pure and simple. Secrecy was one of its prominent features, and when a dentist found out anything of importance he seemed to consider it a religious duty to keep it to himself.

The venerable Elisha Townsend, M. D., D. D. S., said, in his introductory lecture to the class of the Philadelphia Dental College, 1852-3: "During the Revolutionary war, the first knowledge of dentistry was introduced into this country. No longer ago than 1830 there were not more than 300 practitioners in the Union, of whom, perhaps, not more than one in five had attained much practical excellence. In 1842 the number had risen to 1,400, and in 1848 to full 2,000." Even at this early day, advertising was a common method to gain patronage, and was condemned by the better educated part of the profession. Not only in this, but in foreign countries, advertising dentists did their utmost to gain notoriety. An instance of this was published in *The Dental News-Letter* of July, 1853, over the signature of D. B. Whipple, M. D., D. D. S. In order to show you the antiquity of this business, let me read you a part of his

*Read before the Illinois State Dental Society, Moline, May, 1906.

report: "The following description of a dashing dentist is copied from a letter of the Paris correspondent of the *New York Express*: 'You have quack dentists in New York, as we have them in Paris, but I doubt whether you can boast of such a tremendous operator as M. Duchesne, to whom I have already referred in your columns. This gentleman rides about town in a highly illuminated wagon with a roof to it. Upon the roof is a man dressed in the costume of the middle ages, and armed with a pair of cymbals and a bass drum. M. Duchesne stands in front with a helmet and feather, and surrounded with the instruments of his profession. He stops in some unfrequented place, collects a crowd by means of the cymbals, and then invites the afflicted to apply at once for extraction and relief. A notice on the outside of the wagon reads thus: "5,000 francs if I miss a tooth." This is surrounded with a halo of double teeth, the roots of which are painted to resemble parsnips. Each sufferer pays a franc, and leaves his tooth behind him. Each applicant mounts on the seat with M. Duchesne, who demands the coin before proceeding. At the time of the extraction the drum gives a bang of triumph, and then the tooth is held up in the air, for the admiration of the multitude.' The above quotation is a befitting commentary upon the charlatanism existing in the dental profession. The correspondent observed, "You have quack dentists in New York." He might, with all truthfulness, have used the inclusive expression, everywhere.

At a dental convention held at Cleveland, Ohio, in 1857, resolutions were offered and approved, condemning advertising as savoring of quackery, and entirely unworthy of a noble profession.

These facts prove conclusively that even at that early day advertising was condemned in our profession. This difference of opinion resulted in opening a new field of thought, and from a trade, a profession was developed, which today is one of the noblest and greatest of all.

Advertising on commercial lines has proven to be a success, and were any of us managing a department store, we would undoubtedly advertise as largely as we could.

Advertising in dentistry has been, and is now condemned, not because it is contrary to the code of ethics, as some newspaper men would have us believe, but because it is utterly impossible for any

person in the profession to perform good and reliable operations for a small fee. The only thing in a dentist's advertisement that appeals to the public in the promise of something *good* and *CHEAP*.

The Western Dental Society at its meeting in St. Louis of May, 1857, adopted the following report presented by the committee on fees and professional etiquette: "Resolved, that the long experience and thorough course of study needful to render the dental practitioner competent to discharge the responsible duties of his profession, entitle him to a fair compensation for services rendered. That cheap dental operations, either surgical or mechanical, are dear and usually unsatisfactory to the patient, and tend to degrade the profession in the estimation of the community. Resolved, that this society recommend the formation of local societies for the purpose of regulating fees, and at the same time promoting harmony among the members of the profession."

A dentist who advertises does so to gain patronage, get money and thus be successful. But what constitutes success in dentistry? After careful consideration of this question, and having asked the opinion of several practitioners as to what they would deem worthy to be called success in our profession, I have reached this conclusion: The dentist who receives the largest fees in his locality, not once in awhile, when some unsuspecting patient trusts him to do the right thing and he takes advantage of his opportunity, but the man who regularly gets the largest fees, and continues to do so, is the dentist who should be termed successful. If this be true, although the advertiser may flourish for a time, he can never be successful, and his name will not linger in the "Halls of Fame."

There are two classes of men in the profession. One class are professional dentists and the other are commercial men practicing dentistry. A professional dentist always remembers the Golden Rule, and performs only those operations for another that he would, under similar conditions, want done for himself.

A commercial man, practicing dentistry, does what his patients want him to do, whether it is extracting a first molar, a protruding cuspid, or other equally illegitimate operation, just because he wants to get the almighty dollar from his patient.

Why is it that we have so many of these commercial men in the profession? Our dental colleges are responsible for at least a large

percentage of them. Any college properly managed is of great assistance to its particular profession, but comparatively few of our dental colleges are being conducted on a professional basis. This has given credence to the statement that they are commercial institutions, and as such, do not need to observe the code of ethics.

Dental colleges advertise in every way, both good and bad. We all have received cards from them with this or similar questions printed thereon: "Do you know of any young men who might be induced to study dentistry? If so, will you kindly write their names and addresses on this card and return it to Dr. Wonder, Dean." One college advertised in a medical journal last year as follows: "There are many openings for young men and women in dentistry, and the demand for good practitioners is far in excess of the supply. The *Wonderful (?) Dental College—Patron College of Dentistry*—is offering excellent facilities for a thorough course in this special work. Full credit will be given for those who have done work in similar courses, as medicine or pharmacy. Separate laboratories are maintained for each subject, which are well equipped with all modern appliances, and directed by men of thorough training, live experience and broad scholarship. This college is a member of the National Association of Dental Faculties and its diplomas are of *universal (?)* recognition. Address Dr. Wonder, Dean."

By such means as this, many young men have been persuaded to study a profession which was as opposite as the poles from the vocation they should have selected. A person to master this profession should be well educated, because he would be better able to solve the theoretical mysteries of dentistry. Dr. Ward, in the *Cosmos* for May, 1904, said: "Our calling is a composite, uniting in one the physician, scientist, watchmaker, goldsmith, mason, moulder and even blacksmith, the delicate touch of an artist, the strength of a Hercules, the patience of Job and the perseverance of a Grant." Is this an exaggerated estimate of our profession? By no means. This being the case, can the advertising methods adopted by dental colleges to get students, and the commercial manner these students are turned into graduates, ever be a professional success?

The educational standard of matriculation is too low.

Our colleges do not make a proper selection from their student material, as any person who has the fee can generally be admitted.

Students should be compelled to put in their full time in the college or with a capable preceptor, and not be allowed to spend their summer vacations on farms, in stores, or at other work.

Colleges give no instruction that helps a young dentist to meet his patients and feel at ease in his relation to those who come seeking his advice and services.

After graduation, the young dentist secures a location, and buys an outfit, only too often, on the credit plan. He gets a few patients, but, for the first year or more he can not make enough money to meet his expenses, and keep up the payments on his outfit. In his leisure moments he remembers when he saw in a magazine the advertisement of a dental college, that first caused him to think of studying dentistry. He remembers, too, how his alma mater advertised in the daily papers, to get the necessary patients for the infirmary clinics. Can we, as individuals, censure that young man for advertising, his alma mater having shown him how? But, you argue, dental colleges can advertise, because they are commercial institutions. "Do men gather grapes of thorns or figs of thistles." If the members of our profession would insist that dental colleges observe the code of ethics themselves, and teach it to their students, very few advertising dentists would graduate in the future.

All dentists advertise in some form or other. Some of these forms may be classed as legitimate, respectable and professional, while others are exactly the opposite. The regular advertiser has many good points for which he should be commended, and at least he is no hypocrite towards his professional brethren. We have, however, in our profession too many men who want our societies to consider them ethical, but who resort to those low grades of advertising that are deplorable. Let me give you one newspaper sample: "Dr. Blank has been asked to give a clinic before the State Dental Society. This is a great tribute to our local dentist, as none but first-class operators are ever allowed to give these clinics." Some dentists use any and every excuse to get their names in their local papers. Sometimes it is paid for, but more often it is free advertising. Something for nothing seems to be the basis of a great deal of trouble of this character.

Let us enumerate a few of the ways some of us advertise:

A. Before the public—

By our office outfit and surroundings;
 By using cheap materials, teeth, etc.;
 By driving fast horses or automobiles;
 By joining and attending churches, lodges and clubs;
 By performing operations for our patients that are good, bad or worse;

By using teeth for our patients that are several shades too light or several sizes too small;

By doing for our patients what we know to be wrong, as the extraction of first molars or protruding cuspids;

By letting our patients tell us what to do and when to do it;

By keeping our persons neat and clean, or our clothing and our fingers soiled, and our mouths filled with tobacco or its odor;

By using cuts or exaggerated statements in newspapers, circulars or concert programs;

By telling patients how much money we are making, or did make last year;

By telling the name of one patient to another, and being particular to tell the character of the operation performed and sometimes even the fee received;

By seeing how cheaply we can do certain operations, or by telling our patients how much more Dr. Blank would charge for a similar operation;

By canvassing on the street, store or other convenient places;

By allowing our wives or other members of our family to canvass for us amongst their neighbors and friends.

B. Before the profession—

By telling each other what large fees we receive;

By telling how many hundred dollars we are making;

By recommending some patent cure-all;

By getting a patent on some instrument or appliance;

By placing on sale some secret preparation;

By getting on the faculty of some dental college and publishing it to our patients on our stationery;

By reading essays or giving clinics before dental societies.

In the *Dental News-Letter* of January, 1857, the following dialogue is reported as having actually taken place between two dentists:

A. "How's business?"

B. "Very good, much as I can do. How is it with you?"

A. "Oh, I am hurried to death. Glad to see it rain when I get up in the morning, as I then have hopes of being able to eat my dinner without interruption, which is very seldom the case."

B. "Yes, I am glad, too. Indeed, I hardly ever get to bed before midnight, and often then I am hurried out of bed in the morning to attend to some patient who has become tired of waiting his turn."

I firmly believe those two men are still practicing dentistry. Did you ever meet them?

Without any doubt great injury is done to all professions by the indiscreet acts of the individual members. Our profession has had its share of troubles of this character. How often have you heard dentists say they would not join our societies because so many members were continually breaking the code of ethics. The regular advertiser does much less harm to the profession than does the prominent member of our societies who is continually looking for some excuse to get his name in the daily papers or to commit some other equally unprofessional offense which might be considered an infraction of the code of ethics.

We should, as individuals, strive to uphold the dignity of the profession. We should educate our patients to a proper appreciation of our services and the fees we receive for the same. This can not be done by allowing them to think we are cheap or that other dentists charge more for the same class of services than we do. To be considered *cheap*, in the popular understanding of that word, should be an insult to any progressive dentist. Not how cheap, but how good, should be our motto. Let us, as members of a noble profession, strive to be worthy examples of what our calling demands, and if we do, the question of advertising will be easily settled, for then we will actually live up to not only the letter, but the spirit of our code of ethics, which is simply carrying out in our professional life the teaching of the Golden Rule.

WHERE DO THE PUBLIC COME IN?*

BY W. MITCHELL, D. D. S., LONDON, ENGLAND.

Mr. President, Gentlemen :

The topical question which is the title of my paper has special reference to the effect of medical supervision and legislation in connection with dental matters.

We who are assembled here today have much to be thankful for that the medical faculty of the University of Maryland over sixty years ago refused permission to Chapin A. Harris and Horace H. Hayden to deliver a series of lectures upon dentistry in that institution. Who knows that, had their wishes been acceded to, we should have had as many illustrious names inscribed upon the tablet of our profession's history, or as many ingenious discoveries both in methods and appliances, as are now the rightful heritage of the sons of the nation which eventually is destined to be the leader and arbiter of the world's progress in Science, Art, and all that goes toward the uplifting and benefiting of mankind.

It is interesting to note the positions occupied by the medical profession in respect to dentistry in the United States and Europe.

When the University of Maryland curtly sent the men who had faith in the future of our profession from its doors, they were not discouraged at this rebuff; for having the dogged determined spirit incidental to pioneers, they decided to start a school of their own, formulating a curriculum, and adapting such portions of the medical course then in vogue as seemed necessary for their purpose for the time being.

The history of the Baltimore College of Dental Surgery is familiar to you all. That school proved the bedrock foundation upon which all the other dental schools of the world have arisen; and no matter how persistent other institutions may have been in endeavoring to ingraft dental on to medical schools, where competent dentists have been at the head of dental colleges, better dentistry has been taught, and more useful practitioners have been graduated therefrom.

*Read before the American Dental Society of Europe, Geneva, Switzerland, April, 1905.

The earnest enthusiasm of the pioneer instructors of the United States early commanded the respect of the medical profession of that country, who had the good sense to realize the fact that men who had the courage and ability to wrest from a questionable obscurity a trade, develop it, and cause it to be recognized as a branch of the healing art, and as such secure for it for some years past recognition as a section in the International Medical Congress, were men who not only had the courage of their convictions, but also possessed the ability to carry them out, without any parental patronage on the part of those who considered they held a monopoly of everything pertaining to the treatment of ailments incidental to the human economy.

The results of this independent and decided stand on the part of dentists on the one hand and the capacity and good sense on the part of the medical profession of the United States to realize and appreciate that dentistry, while possessing many things in common with many specialties of medicine, was a unique calling not necessarily requiring a paternal supervision on their part to ensure its acceptance by the people, or to add a pseudo-dignity to it, as is too much in evidence wherever dentists are so solicitous, and manifest so much anxiety as to their social status.

The wisdom of the course pursued by the medical profession in the United States has promoted the development of our profession in a manner impossible under any other conditions.

Dentists were put upon their mettle, and they have not been found wanting. Institutions of learning sprang up, societies were formed, a new literature was inaugurated and developed; conditions, methods, appliances and requirements were discussed, resulting in the formulating of a comparative systematic method of practice, and the establishment of a recognized code of ethics. In due course laws were formulated and passed in the interest of the public, which in a great measure insure to them that the services they may require of their dentists are of as good a quality as those rendered by their medical or surgical attendants; and while these laws may not be a unit in their present condition, owing to state autonomy, *the spirit is*, and time will evolve the remedy for any present defects, for we may safely trust the men who have done so much for our profession in such a comparatively short time to harmonize differences now ex-

isting, both legislative and scholastic, in a manner creditable to themselves and satisfactory to their profession.

The crude empiricism of the early stages of dentistry in European countries is largely due to its association with medicine, as many, or possibly more fallacious so-called remedies for toothache are recorded than for any other ailment known to the early savants, and with that quaint conceit incidental to many of the then practitioners of medicine, and of which we today see the persistent impress of legendary heredity, a refusal to give way to progress and more advanced methods was manifested, especially when that advancement was suggested by those outside the ranks of medicine, and even at the present day, in all European countries, save one—Spain—medical men legislate for and adjudicate upon dental matters, and by law are permitted to practice dentistry, though they may not know the difference between a retaining groove and a Perry's separator. In Europe the native dentist is to a very great extent dependent upon some medical friend for his recommendation, and consequently to a corresponding extent his professional success. This certainly is not as it should be, as it is likely to lead to gross abuses, and to work to the disadvantage of the public. It is not an unknown condition for a medical man to ask for and receive a commission upon a dental fee earned through his recommendation, which condition can not exist without working an injustice to some one. Either the public, dentist, or medical man suffers, I leave it to your judgment to decide. It is unnecessary for me to point out to you the colossal farce any law is which permits a medical man to practice dentistry without having studied it, knowing as you do the many dismal failures made by those who have under all systems completed the prescribed dental courses. Of course such laws are only seriously considered and applied in those countries where medical men retain the right to regulate matters they are not in touch with, or with which they have no practical concern. Hence the necessity of having broad-minded, capable and appreciative dentists—men who are able to demonstrate and teach, and not merely talk in a theoretical way upon debatable subjects—to guide the footsteps of dental legislators, and then to occupy the places now filled by those whose knowledge of the real requirements of our profession appears to be of such an extremely embryonic nature, then, and not till then, will the public begin to really benefit in the manner it should.

At the present time much interest is being taken on behalf of the wards of the different civilized countries of the world, and of their defenders upon both land and sea in regard to their dental requirements, with the view of keeping them in an efficient condition. In many schools and charitable institutions in England tooth-brush drill has been systematically taken up to good advantage, and in many cases dental attendance has also been afforded the inmates; (and I may here incidentally remark that I inaugurated a corresponding system in the Girls' Industrial Home at White Sulphur Springs, Ohio, over twenty-five years ago) *per contra*, in many institutions in England dental attendance has been denied inmates owing to the inability of a majority upon the boards failing to appreciate the civilizing and beneficial influence of the tooth-brush and professional care, one member going so far as to say "he had not used a toothbrush for forty years." I have no doubt he might entertain the same conservative sentiment with regard to a bath tub.

The British War department has followed the lead of the War Department at Washington in having dentists appointed to the army, and is causing naval surgeons to take a partial dental course to familiarize them with dental diagnosis and temporary conservative treatment, instead of heroic radical treatment as heretofore rendered by them. The South African war on the one hand and the Philippine war on the other has opened the eyes of the Government authorities of both Great Britain and the United States as to the necessity of dental attendance in connection with the health and efficiency of troops both at home and abroad, and dentistry as can only be administered by those having a special training therein; and while the number of dental attendants in proportion to the number of troops is only equaled in absurdity by the diminutive salaries paid by the respective governments, the project is undoubtedly the thin edge of the wedge which some day will be driven home by men much more competent to handle the maul than those who now have it in hand.

Demand regulates supply in most instances. By educating the public in the United States, a personal interest was early developed as to the advantage of and necessity for dental attendance. To cope with the growing requirements institutions of learning grew up, and

facilities were afforded young men to enter a profession on *reasonable* terms and exactions, fairly well equipped for their life's work, thanks to dentists having these matters in charge. These men were thus enabled to go out into the world and offer their services at a fair fee to those requiring them. This would have hardly been possible under the régime exacted under medical supervision as at present in vogue in nearly all European countries.

In the first place, the entrance or preliminary examinations are unnecessarily high in some respects, and in others do not embody essentials which would conduce to the more intelligent understanding and appreciation of studies and methods incidental to our specialty, but wrongly entailing as they do additional years of academic attendance without technical manipulative instruction, which should form an important part of the early training of everyone who proposes following a manipulative calling. Secondly, an apprenticeship of at least two years, and a three or four years' general medical and dental course, and incidentally the high professional educational fees prove almost an insurmountable barrier to many who would enter our ranks, and be both a credit to our profession and a benefit to the public. There is no doubt in my mind that the present exactions to a very great extent are brought about by men who, realizing the fact that they have failed in benefiting the public as they may have hoped to at the beginning of their careers, and thereby falling far short of being a professional success, devote themselves to formulating theoretical requirements the majority of which they themselves would in all probability be unable to master, and which later on experience relegates to the limbo of fads and other useless and time-wasting devices. It is a well known fact, the greater a man's medical knowledge the poorer his ability to render dental aid, the few brilliant exceptions to this rule incontestably proves the accuracy of my assertion.

It is my pleasure to count amongst my dearest friends leaders in our profession who have taken both the medical and dental degrees, and all concur that much of the medical course could have been eliminated to the advantage of their practicing dentistry, especially had the time thus unnecessarily put in been devoted to the study or practice of something more specifically than collaterally dental. Such statements coming from men after an active practice varying from

twenty-five to forty years can not be lightly brushed aside, but should certainly be of some value in the guidance of amateurs in dental legislation. The great tendency in countries where dental matters are controlled by medical legislators is to overwhelm the practical by a theoretical redundancy, which often at best may only have a collateral bearing, much to the subsequent disadvantage of the public.

Observe two operators performing an operation, one with all the theoretical knowledge his Alma Mater can imbue in him, the other a dentist who has gone in for oral surgery; the latter makes the former appear a perfect neophyte, verily, comparisons *are* odious.

The way to best benefit the public in this matter is to so arrange the preliminary requirements of dental students that they may be *reasonably* fit to enter a profession requiring principally a practical manipulative capacity, then arrange the professional studies, both theoretical and practical, especially the latter, that the graduate can afford to go to the public and present his ability at a figure the public can afford to pay. As at present arranged, the majority of the public in European countries can not afford to avail themselves of conservative dental services, owing chiefly to the fact that so many years have been devoted to preparing for the unreasonably high preliminary examinations, followed by the long term of professional education with its incidental high fees, necessitating years of time and great financial outlay ere the student obtains any return from his efforts; to this must be added five to ten years more of time before he is established—under favorable circumstances—in a lucrative practice, and when we consider that a dentist's best work is done between the ages of 25 and 45 years, you will see and must admit but little time is allowed him by nature in which to secure a clientele able to back up his most earnest efforts to secure their greatest comfort, and incidentally a reasonable competence for his later years. This means that conservative dentistry is beyond the reach of the majority. And say what you will the reasons aforesaid explain in a great measure why men with minds fairly bulging with facts and debatable theories, and a paucity of application, find it much more profitable to extract teeth wholesale, and with the aid of the work-room mechanic, replace them with artificial substitutes, than to carry on a conservative practice, wherein the personal equation is a more exacting factor, and the period of efficiency is necessarily more lim-

ited, dependent as it is to so great an extent upon eye-sight, co-ordination, and an unflagging, active and responsive nervous system.

This subject, possessing so many ramifications, it is hardly possible in a single paper to do more than touch upon some of its most vital points. If I have succeeded in presenting for your consideration a few of its phases in an understandable way, and caused you to think more deeply upon a subject which must have occurred to many of you heretofore, I shall feel well repaid, and I trust you will not consider the time misspent in my reading this paper.

PYORRHEA ALVEOLARIS IN THE TIMES OF THE PHA- RAOHS AND THE PRESENT EGYPTIANS.*

BY W. J. YOUNGER, M. D., PARIS, FRANCE.

In the July number of the *Texas Medical News* of 1903 is an editorial on Pyorrhea Alveolaris, founded on the opinions and writings of several well-known dental practitioners, who have made this disease a study. In this article Prof. E. T. Darby, of Philadelphia, is quoted as saying that he had spent several years in Egypt and had examined the mouths of several thousand natives, both living and dead, also of the mummies, and had failed in any instance to discover any signs of caries in their teeth, or any traces of pyorrhea alveolaris. Having made two trips to the land of the Pharaohs, one of which extended to the first cataract, and having caught glimpses of the teeth of the various native races whilst they were grinning and grimacing, and feeling sure that I detected the swollen and irregular gum margins indicative of the presence of pyorrhea alveolaris, I was astonished at this declaration. Esteeming Dr. Darby so highly, not only for his great ability in his profession, but for his high character as a man of truth and integrity, I questioned for the moment if I had seen aright. Nevertheless, a long acquaintance and experience with this disease renders the sight very keen in detecting its presence, and so deeply was I impressed—notwithstanding the observations were superficial—that I *had* seen pyorrhea alveolaris on these several occasions, I was certain that either this eminent and esteemed gentle-

*Read before the American Dental Society of Europe, Geneva, Switzerland, April, 1905.

man was misquoted or the conditions of these dwellers by the Nile had changed since he had made his examinations. Also, he was quoted as saying that he attributed this singular immunity from decay and pyorrhea to the fact that these people lived chiefly on raw wheat, grinding up the whole grain with their teeth. It has been my theory that the exciting cause of pyorrhea was the lodgement of hard particles of food and other insoluble substances between the free margin of the gum and the crevices of the teeth, such as from husks of cereals, covering of beans, peas, lentils, fragments from fibrous plants, as celery, asparagus, seeds of berries, earthy particles, sand, etc. which during the act of mastication and the formation of the bolus were forced by the tongue into the spaces where they remained trapped, until the irritation and inflammation set up by their presence extended to the alveolar edge and so prepared the way for bacterial infection and resultant pyorrheal inception. This latter idea was therefore in direct conflict with this theory and perplexed me still more. There was, moreover, an impression in my mind, gathered from readings and conversations, that gold fillings and other evidences of dental art had been found in the teeth and mouths of mummies. I determined consequently on my next visit to Egypt to make critical examinations of the mouths of the living Egyptians, as well as of the mummies, and if my investigations should support the conclusions formed from my casual observations, to inquire of Professor Darby, *if* he had made the statements attributed to him in this editorial, and *if* so upon what grounds.

There were some other points also that I wished to determine, if possible, in connection with these investigations. One was the suggestion that the immunity of these teeth from pyorrhea was the result of a vegetable diet; an opinion that would be favored by those who believe in the gouty origin of this disease and who claim that the eating of animal food—especially meat—is the principal factor in its production. Another—the theory maintained by very many in the profession that pyorrhea alveolaris is a modern disease—and still another—to elucidate to what extent dental art and its application was known to the early Egyptians.

In the following January I again went to Egypt and with the aid of a friend in the ministry had two large clinics, near the Citadel, placed at my service. Two mornings were devoted to this work. The

people examined were of both sexes and their ages ranged from twelve years to sixty-two. About ninety in all were examined, and with the exception of four all had pyorrhea in more or less advanced condition. Of these four, one was a boy of fifteen, another a young woman of sixteen, a girl of thirteen and a young man of twenty-two or three. With the exception of a man of sixty-two, who had never tasted animal food, all the rest partook of it whenever they had a chance, never oftener than once a week, however; the great majority once in a month, and some only once in six months. The amount of animal food eaten was too slight to have any material effect on the nutritive result. These people were practically vegetarians, though only so by reason of their poverty.

Thinking that perhaps the unhealthy environment, crowded, filthy conditions and bad atmosphere in which these people lived might have something to do in predisposing to this remarkable prevalence of pyorrhea, I made arrangements with the aid of my distinguished friend to go to Fayoum, distant about four hours by rail from Cairo. The kindly, intelligent and hospitable governor of this famous oasis, Moohab Bey, took up the idea enthusiastically, and under his excellency's escort, and in company with Major Leonard, assistant government inspector, Harari Pasha, minister of Finance, and two or three other distinguished personages, we proceeded to several distant villages and spent the greater part of the day in making examinations among the Fellaheen, that is, the agriculturists. The diet of these people was entirely vegetable except on Fridays and feastdays, such as Ramadan, when they allowed themselves meat. Their teeth showed abundant evidence of wear by mastication, and in many of the older inhabitants, what teeth were left had their crowns worn almost entirely away. Yet in all the mouths examined, young men and old, there was not *one* found in which the ravages of pyorrhea were not plainly visible.

With us, the age of an individual is approximately told by the wear of the occlusal surfaces of the teeth; not so, however, with the Egyptians, for we find even in the young a decided erosion of the surfaces. This is a result due, not so much to thorough mastication, as to the erosive action of the sand that gets incorporated into their food through lack of cleanliness and careless manner of its preparation. Sand is everywhere and they do not seem to mind it in their eating

any more than the children mind the flies feeding upon their sore eyes. And it is to these gritty particles of sand working their way beyond the cervical margins of the gum that I chiefly attribute the universal prevalence of pyorrhea among them, especially its presence in the young.

After my return to Cairo I made the mummies my study. All the royal mummies and others of historic significance are kept in the museum of Cairo and, very properly, no liberties are permitted with their august remains, but a great quantity of mummies of lesser dignitaries, as high priests and priestesses, court officials and generals, are in the anatomical museum connected with the medical college, where minute inspection and even dissections can be made and allowed for scientific purposes. This museum is under the charge of a very courteous and able gentleman, Dr. G. Elliot Smith. It was under his supervision and intelligent assistance that I was enabled to make critical examinations of these remains and also learn the histories attached to them. In none of these subjects, some dating seven thousand years B. C., did we find any traces of dental art. He himself had often looked for such evidence, but never found any, whilst the necessity for it, as evidenced by badly decayed teeth, the openings in the alveolar wall caused by alveolar abscess, and the erosive effects of pyorrhea alveolaris, were abundant.

I have brought with me to show you, the lower jaw of a priestess of the XXVI dynasty, about 700 B. C., in which all these conditions are shown.

While pursuing my investigations in the museum of Cairo, where the principal royal mummies are kept in glass cases, and studying the peculiarities of their jaws and the arrangement and formation of their teeth, I noticed that in the mouth of Rameses II there was some cotton stuff which allowed of the exposure only of the right superior cuspid and the first bicuspid. As none of the other mummies had this cotton stuff in their oral cavities, I concluded that its presence in the mouth of the great Rameses was due to his having lost his front teeth, and that this cotton had been placed there while his body was being mummified, to support the lips and thus preserve the contour of his mouth. That Rameses should have lost his teeth was not to be wondered at, considering that he was ninety-six years of age when he died. Nevertheless, I wished to ascertain if this was

so, because if Rameses was without teeth it would be proof—contrary to a popular belief—that artificial dentures were unknown to the Egyptians, for the inordinate vanity of this historic Pharaoh of the Oppression would have never permitted himself to have endured a toothless deformity if this defect could have been remedied by artificial means. I speak of the vanity of Rameses being inordinate because he would not otherwise have spent the sixty-seven years of his reign in building temples and monuments to himself and erasing the names of the Pharaohs who had preceded him, even that of his own father, Setti I, and substituting his own in their stead, had his vanity been less colossal.

I applied therefore to the director of the museum for permission to either raise the cotton wad or to pass a needle through it, but in the absence of his chief, M. Maspero, director general of Egyptian antiquities, he declined to take the responsibility of having the examination made.

In the British Museum of London I found, on my recent visit to that city, the skeletons of two high officials of the XI dynasty, about 2600 B. C. and about 1,300 years before the time of Rameses II. Upon several of the teeth, of both these skeletons, can be seen the tartar of salivary deposit and the darker incrustation of pyorrheal origin.

The conclusions then to be drawn from all these examinations are, first, that pyorrheal alveolaris as well as caries existed in the times of the Pharaohs and is rampant among the Egyptians of the present day. Second, that the science and art of treating pathological conditions of the teeth was unknown to the Egyptians, certainly, to the time of Cleopatra and the Roman occupation, and that all stories to the contrary are but fictions of the imagination, fairy tales of irresponsible story-tellers.

In conclusion, and in justice to Dr. Darby, I will state that I have received a letter from this gentleman, in which he totally denies ever having said anything about pyorrhea in connection with the Egyptians, modern or mummies.

CORUNDUM WHEELS IN DENTAL SURGERY.*

BY DR. W. KELSEY, MARSEILLES, FRANCE.

The subject I have chosen may seem puerile to some of the gray-haired members of our association, but we older men often lose sight of the fact that our knowledge is, in a great measure, the outgrowth of personal experience and observation, and what seem commonplace suggestions to us may help break the clods and level the hummocks that obstruct the long road to success, which still stretches out before the majority of the younger members.

In seeking new remedies for obscure maladies and devising ingenious appliances for doubtfully useful surgical operations, the value of so simply an instrument as a corundum wheel in dental surgery is frequently lost sight of, however the dangerous lesions caused by the eruption of the third molars, the painful lacerations produced by the sharp angles of offending teeth or protruding roots rarely require other remedial treatment than the intelligent use of the dental engine.

The most frequent cause of the serious complications often attending the eruption of third molars is lack of space, vertical space, for the proper development of the organ; nor is this restriction always directly due to the disproportion between the size of the teeth and the dimensions of the maxillary. On the contrary, the irritation is usually produced by the contact of the previously erupted third molar with the distended membrane covering the erupting tooth in the opposite jaw. In most cases where trouble exists, a careful investigation will disclose a distinctly visible imprint upon the inflamed gum, which receives its impact at all times when the mouth is unopened. A careful grinding of these cusps generally suffices to reduce the inflammation, relieve the pain and restore the parts to a healthy condition.

Another serious complication amenable to similar treatment frequently arises from an outward deviation of the third molars, which sometimes penetrate the cheeks, thus producing painful ulcerations that interfere with movements of the jaw, and render mastication almost impossible. In the rare cases where relief is not obtained,

*Read before the American Dental Society of Europe, Geneva, Switzerland, April, 1905.

cutting away of the gum, cauterizations, or the application of the usual topical remedies can be tried, and as a final resort, extraction. It is perhaps needless to add that discrimination should be exercised in deciding which tooth should be sacrificed. Many practitioners lay particular stress upon the utility of extracting the second permanent molar, but the fact that in thirty-five years of active practice I have no distinct recollection of ever having sacrificed a healthy second molar to facilitate the eruption of a third molar, convinces me that this practice should only be resorted to when every other device has failed in giving relief. If badly decayed there should be no hesitancy in removing the second molar; if, on the contrary, all the teeth are sound, the erupting tooth itself should, if possible, be extracted. Though sometimes impractical in consequence of the malposition of the organ, or the difficulty in opening the mouth, such cases are very exceptional. A narrow beaked forceps curved at an angle of 30° is extremely convenient in cases where these conditions are presented. Not infrequently the tooth has a marked forward inclination, and impinges upon the distal surface of the second molar. When such a contingency presents itself, a free separation of the teeth with a disk often renders comparatively easy an operation, which previously seemed almost hopeless. The unavoidable slight wounding of the gum with the disk has little significance when compared with the benefit derived from a successful operation. Complete relief from inframaxillary trouble can often be obtained by the removal of the upper third molar, though instances are cited where the nearly horizontal position of the confined organ in the mandible has necessitated recourse to serious surgical intervention. The utility of the disk, when employed judiciously, in arresting incipient caries is incontestable. Not infrequently it is found desirable to remove a badly broken tooth over which the adjoining ones have partially closed. When this condition presents itself a free separation with the disk is an indispensable precaution against the possibility of injuring the contiguous teeth during the operation.

The efficiency of the corundum wheel in relieving the annoyance caused by worn or broken teeth is well illustrated by two typical cases.

The first, that of a curé from a neighboring small city, had baffled the science of the local physicians and dental surgeons. He complained of a soreness of the tongue, so great as to prevent him from

conducting his services. A glance at the mouth showed that the lower front teeth had all been transformed into chisel-like implements by the wearing away of the enamel, and the hollowing out of the dentine. A careful rounding of all the sharp angles with a wheel was followed by a speedy and permanent cure.

A still more remarkable instance was that of an old lady, who called and explained with much difficulty that for many months she had been unable to articulate distinctly. Upon the advice of her physician, who, though much perplexed, suspected that the difficulty might be of dental origin, she called to see whether oral science could give her any relief.

At first glance the puckered lips and indrawn cheeks suggested paralysis, but both sides were equally affected, and there was no unnatural appearance of the eyes. I was immediately convinced that the cause of the trouble could be found in the buccal cavity. An examination of the mouth corroborated my suspicions and left no doubt in my mind that the infirmity was entirely due to a habit she had acquired of maintaining her upper denture in position with her cheeks and tongue, while at the same time the latter organ was instinctively trying to avoid laceration by contact with the sharp angles of her few remaining lower incisors. I extracted two or three stray roots, obliterated all sharp angles with a disk, made her a properly fitting set, and was rewarded by an immediate amelioration in the symptoms.

A few months later she called to thank me for the benefit she had experienced. Although the trouble had not entirely disappeared, there had been a constant improvement in her articulation and the distortion of her features had nearly disappeared. As the patient was from a distance, I have since lost her from view, but have reason to believe that a complete and permanent recovery has supervened.

In citing these cases, what I wish particularly to emphasize is the statement that simplest means are often found the most efficacious in dental surgery, as well as in general surgery, and when delay is not dangerous these resources should be exhausted before resorting to more heroic measures.

PLATE FILLING OR PARTIAL CROWNING.*

BY DR. H. L. SCHAFFNER, FLORENCE, ITALY.

When I presented the subject in 1894 at the International Medical Congress in Rome, I thought it was new, but found out afterward that the system had been referred to already in some of the textbooks. The reading of my paper at the time did not seem to create much interest among the audience, and it is for this reason, I suppose, that it was omitted in the published report. Even today, had I not been asked, I would not have ventured taking your precious time by advocating a system which some may consider a retrograde act.

"Plate filling," which is one of the most suitable terms for this style of work, is not intended to supplant altogether filling teeth with gold or porcelain, but to meet a want that has long been felt in the profession. Considering the services it has rendered me during the last fifteen years, I should have thought it would have been more generally adopted. It compares well with crowning, and in some cases of extensive covering, might rightly be called "partial crowning." The advantage, to say the least, is a durable, painless and rapidly made plug; it can be applied in one sitting to the most delicate tooth and even over an exposed pulp. Of course, the results will be in proportion to the skill and judgment of the operator. A few special instruments and a convenient alloy will also play an important part in securing the best of results.

Pure gold is rather too soft, but by adding a little platinum and silver in certain proportions, the danger of melting the plate is lessened, the color is greatly improved, and, while being tougher, it is quite malleable enough not to spring back when burnished into place.

The alloy I prefer is the following: Gold, 20 parts, silver, 2 parts; platinum, 1 part.

With this I do all my crown and bridge work and, except for the occasional use of platinum, employ no other metal.

A separator, Ivory's matrix holder being the most suitable, is very useful in holding the previously stamped plate in place over the

*Read before the American Dental Society of Europe, Geneva, Switzerland, April, 1905.

cavity, and a foot pneumatic mallet giving an angle blow is almost indispensable to rapidly and nicely completing the adjustment.

Having a stock of different sized, ready beveled standard plates at hand, I select a suitable one, stamp it with ordinary or special pliers, sometimes by Mellotte's process, and fit it over the cavity approximately by means of a smooth pointed plugger. With a little wax placed inside the gold cap thus formed, I take an impression of the interior of the cavity, and with shears trim the overhanging edges till they slightly overlap the border of the cavity. At this point a little experience is needed, and in cases where the cusp of the occluding tooth strikes hard upon the outer ridge, it is advisable to extend the plate some distance upon the grinding surface of the tooth and thus bring the stress to bear further in.

This generally occurs with interstitial cavities of molars and bicuspsids, and when opening them I generally proceed at once with the enlargement of the cavity between the cusps, so far as the bottom will allow, and bevel well. This, besides allowing an extension of the plate, greatly facilitates the introduction of a deeply penetrating soldered support.

As to the retainer, I find that a little strip of metal or half round wire bent so as nearly to touch the bottom of the cavity and soldered at both ends to the extremities of the plate, gives in most cases the best results. In extensive cases, where the sides of the stamped plate require extra support, I either link them by an additional cross-bar or solder a scrap internally; when all fitting is done, in order to give the plate more consistency and to resist the action of mastication longer, I occasionally back it with a piece of soft gold or wire gauze, leaving the edges free, but prefer now to use rather thicker gold of about one-quarter of a millimeter, corresponding to No. 30 to 31 of the American gauge for the plate, with the running internally of a little solder. In order to save time, I have all the soldering done in the laboratory, while I prepare the cavity. The loop or retainer is waxed on for trial, mixing with the wax a little powdered dessicated borax, which, when soldering, gives the necessary flux and helps to hold the loop in place, no clamp being necessary.

The proper cement is of great importance also, inasmuch as it must adhere when hard, and I found that "Harvard" cement serves the purpose very well. As with porcelain inlays, I give the cap a last push

in place with a heated burnisher, thus causing all excess of cement to ooze out, taking care at the same time that when pressing on one side, the other side is not pushed out of place. The separator, when possible, forced in between the teeth, renders great service again and warrants a good fit at the gum line. I then test the articulation again, and, if too high, easily correct it with a little extra heating and malleting. Use will also soon wear the plate, where in the way, and make it feel comfortable, but if grinding is needed, it ought preferably to be done on the corresponding spot of the occluding tooth than on the plate itself. To give the final finish, burnish down where necessary and polish as usual. Before dismissing the patient, make sure that no cement has penetrated under the gum by passing a little floss silk between the teeth and burnishing the edge below.

If I am speaking to beginners, allow me a word of caution, for it often happens when dealing with cavities having frail walls that, when hammering the gold over the edges, these break away. Practice only will teach the amount of stress that these can bear, but in any case, if there is any doubt, it is preferable to bevel well the gold beforehand at these places, annealing again and strengthening subsequently with solder.

An additional fine feature of the system is that repairing with gold or amalgam is also possible without removing the plate filling.

All that is needed is to enlarge with a suitable bur the newly formed opening, half fill with cement and finish with gold or amalgam.

PYORRHEA ALVEOLARIS.*

BY ROBERT GOOD, D. D. S., CHICAGO, ILL.

Mr. President and Members of the Southern Wisconsin Dental Society: I do not appear before this Society expecting to say anything new on pyorrhea, but hoping I may repeat some of the old ideas in such a manner that it may cause some of you to put forth greater efforts to cure this disease with which so many of our patients are afflicted. I consider it the duty of the dental profession to prevent the loss of human teeth, and filling alone will not do this; we must be able to cure pyorrhea also.

*Read before the Southern Wisconsin Dental Association, Racine, May, 1905.

We have all seen teeth beautifully filled and afterward lost from no other cause except this trouble. The question is often asked, Can pyorrhea be permanently cured? It can be. Of this I am positive. I know of no disorder that will yield so quickly to our efforts and bring as much relief and comfort to the patient.

The treatment is surgical entirely, and Dr. A. W. Harlan claims there is no operation that demands the skill required in removing the pyorrheal deposits from the roots of teeth. The method of treatment is as follows: The first thing is to anesthetize the gum by passing a blunt, flexible steel needle—Good's pyorrhea needle, made by Sharp & Smith, 86 Wabash avenue, Chicago—into the pocket relieving enough of the anesthetic from the syringe to flood it. If the needle is withdrawn slightly from the bottom of the pocket there will be no pain, as the drug comes in contact with the soft tissues. The anesthetic used is put up by Dr. Charles Oakman, Cleland building, Detroit, Mich. Hold paper rolls or cotton on each side of the teeth; it will prevent the patient from swallowing any cocaine should we allow too much to escape from the syringe. It is usually best to wait one or two minutes after applying the anesthetic; then proceed to remove the deposits from the teeth, one tooth at a time, operating in this manner until all are thoroughly cleaned. It will sometimes require two or three hours to remove deposits from a molar, but time is no object if one is after results. Thoroughness is the password to success in treating pyorrhea.

When through with the surgical work, flood the pocket with warm, chemically pure lactic acid, using the same kind of needle just referred to, and cotton rolls. It is also wise to protect the mucous membrane with oleostearate of zinc. Now give the parts absolute rest. Keep away with your instruments; instruct the patient to massage the gum with powdered sulphur five minutes night and morning; also use a mouth wash, and in two or three weeks your case will be entirely healed, if no deposits were left. All loose teeth should be held firm, either by ligatures or bands.

The instruments used are a set devised by Dr. W. J. Younger and manufactured by Lukens & Whittington, 624 Race street, Philadelphia. Putting knobs of sealing wax on the handles is a great aid to the sense of touch and prevents one's fingers from tiring. While operating, always keep the points of your instruments in an

antiseptic, lysol preferred. This is easily done by using a large tumbler and standing them in it. Many teeth are very sensitive, and this will retard their becoming firm. If you destroy the pulps in these teeth, it will surprise you to see how quickly they improve.

Gentlemen, pyorrhea causes more disorders in the human being than any of us are aware of—stomach trouble, headaches, extreme nervousness often disappear when this disease is gotten rid of.

Do not tell your patients that pyorrhea can not be cured; you will be doing your profession an injustice and the patient a great injury. Dr. Younger has successfully handled pyorrhea for over twenty-five years. I have seen some of his patients that have gone over twenty years without a return of the disease. One of these patients had gout when he cured her pyorrhea. She still suffers with gout, but there has been no return of the pyorrhea. Dr. Younger I consider knows more about pyorrhea than all of the dental profession combined.

If I have given you anything in this paper that will be of service to you, thank him for it, as he taught me what little I know, and I feel like blessing him every day of my life for the relief I am able to give my patients by making it possible for them to get rid of the discomforts of pyorrhea. I thank you.

ARRESTED DEVELOPMENT—TO WHAT DEGREE CAN WE HOPE TO REPAIR IT?

BY DR. G. ALDEN MILLS, NEW YORK.

More and more our thoughts tend to the solving of the problems of physiology and pathology along simple lines.

Quite recently our reading has centered on articles that emphasize this tendency. Several of these are from the fertile mind of Talbot, which bring before us under the title of constitutional causes and its relation to dental caries this trite saying, "We must first consider the soil in which the tissues are formed, or grown in." We challenge any true scientist to get by such a simple truth. Again, we refer to Dr. Kirk's article now before us, entitled "Mandibular Protrusion," which brings again a simple truth as a digest of the whole subject, "Arrested Development," cause, "faulty nutrition." Also, a

second article by Dr. Kirk, "The Clinical and Chemical Study of a Case of Dental Erosion," doubtless brought about by disturbed functional action, causing again faulty nutrition.

We add by way of record two cases of our own practice, both histories due to drug habit, morphine. In the one case the entire full dentures, absolutely, were dissolved to the gum's borders. The second only partially, leaving some of the anterior teeth in full form. The reason for this is clear to my mind, there has been absolute abstinence, now fourteen years today, the patient has the benefit of crown and bridge work. The first case has never come to abstinence.

If you ask my explanation of these cases, I refer you to the late Dr. Nash's book, emphasizing the term "auto-intoxication," which no doubt so paralyzed nutritive action as to produce an atrophied condition of the entire tooth structure. Simple again, as I see it.

There is a third article by Dr. Kirk, "The Saliva as an Index of Faulty Metabolism." The study of this article is of more than ordinary importance, as there is a fair probability that in connection with Dr. Michael's work it will ultimately prove a more certain method of diagnosis. This study recognizes fully constitutional causes as standing decidedly in front of local causes. It is hopeless to attempt to cure permanently until the constitutional cause has been eliminated.

We would like also to refer to Dr. Kirk's very timely editorial in the May *Cosmos*, viz., "The Problem of Disease Invasion." In this nothing could be more simply set before us than the doctor's views. It brings the studious mind face to face with the fact that nutrition is the great subject for us to consider and gives the only hope for a successful issue.

There is a view to be taken of this question that can only be considered by the larger educated dentist, and that necessity can hardly be met by the present attainment of knowledge. I am thinking of the knowledge of prenatal influences. Such a subject certainly invites an ambitious student.

We can not, as teachers, be of much help to inquiring patients on these lines unless we have some practical data to give. A gross mind can not touch this line of teaching. Patients seeking help here are imbued with delicate and modest instincts and they can only be met along those lines. Surely this intimates a much higher order of practitioner, one that is thinking in a field that hints of the divine

far away from the increasing drift of today into avaricious commercialism.

Our imagination can easily suggest the many vibrations that mature into discords and are sure to make channels for the future defects in malnutrition, producing the character of soil that Dr. Talbot refers to in which defective tissues are formed.

So much has been said, superficially and otherwise, regarding foetal nourishment, we can only trust that a larger education will add to the fund of knowledge that will develop a practical usefulness. We think there are indications that the future practice will develop an earlier attention to tooth growth, growing out of the forceful advocacy of Dr. Smith. As we know, he predicts that there is hope for solving largely the vexed problem of irregularity in dentition, and we are impressed with the possibility of the doctor's hopes.

We predict that there will come a demand for teaching first-year students in what we have termed juvenile practice.

Stimulation, before and after tooth growth, will, in our view, do much to draw a localized improvement, first, to the gums in embryo and a continued one throughout the formative period. We do not hesitate to state that this is being proved by the following of the doctor's advocacy. While this is an age in which drugs are being relegated more and more to the background, yet they have their appropriate place and use. We do not doubt but what the athletic age is adding to physical betterment; by it the physiological energies are producing better structures, and "the soil" is made more fertile.

In reading Dr. Kirk's editorial on "The Problem of Disease Invasion," we were led to write the following on the fly-leaf of the journal, and I am sure that it is fully truthful. I add it to this article as an appropriate ending and unanswerable.

WHAT IS LIFE?

Can we define life? Let us see. Life is an irresistible force that has the creative power to penetrate itself through all the opposing circumstances of mortal existence and hold its potentialities without any diminution of its power. It is the all-power, as far above nature as the heavens are above the earth. It is supernatural; its possibilities extend into the Eternal.

What Life exhibits to us in nature, we can define, but Life in the

supernature eye hath not seen, neither hath it entered into the heart of man to conceive of what it may develop into.

In the supernatural the natural mind is substituted by one that can only be used as a channel through the new creature—emphasized by St. Paul in his teachings. This mind searches for the Truth only at its source.

The natural mind can only speculate, it is compelled to struggle up through the dense darkness toward Truth, but never reaching it.

The supernatural mind gets Truth by revelation. This condescends to come down from the Source and establishes itself in facts. The secrets of Truth are only with those that fear to contradict the manifestations.

THE AIM AND POSSIBILITIES OF DENTAL ORGANIZATION.

BY J. T. SEARCH, D. D. S., ONARGA, ILL.

Fellow Practitioners: I have not attempted to write on pyorrhea, porcelain filling, nor any other of the many subjects engrossing the attention of the dental profession today, and ably discussed by eminent men in our journals and at our conventions. First, because I feel unable to present anything new upon those subjects and, second, because another theme is of primary importance and should be of vital interest to this Society, viz., the aim and possibilities of dental organization. I think I should say the aim and possibilities of this organization. In other words, how may we, as a society and as individuals, make this organization a potent factor in the promotion of our several interests—professional, financial and otherwise? And this is certainly a pertinent question, else why are we here? Unless we are to reap some tangible benefit from these conventions, why spend time and railroad fare?

I have been told that one of the fundamental reasons for the reorganization of our State Society was that by an increased membership and a larger representation of the dentists of Illinois we might influence the legislature to pass a more effective dental law.

Perhaps that is true, and yet, three years ago at our State con-

*Read before Kankakee District Dental Society, January, 1905.

vention at Springfield, I listened to a discussion of the merits of our present dental law. I shall quote a few opinions: Dr. J. N. Crouse said: "What's the matter with the law? The attorney-general tells me we have a very good one, but the trouble is it hasn't been enforced."

Dr. D. M. Gallie: "I think Dr. Crouse has sounded the right key—the law is all right, but hasn't been enforced. The less we tamper with it, the better results we shall get, especially if the dentists support it."

Dr. J. G. Reid: "We probably have as good a dental law as there is in the United States."

Dr. G. V. Black: "If the attorney-general's interpretation stands, our law is a good one, and we need not trouble ourselves at present about any modification of it."

Now, while conditions may have slightly changed in three years, the needs of dental legislation do not so strongly or directly appeal to me as do many other things which more closely concern our immediate selves.

As first among these I may quote from the constitution of our State Society, "The promotion of the honor, usefulness and interest of the dental profession and mutual fellowship and good feeling."

If we would accomplish what we owe to ourselves and to our patients, we must get into our minds that spirit of fraternity which will prompt us not only to attend and willingly assist in these conventions—but that at each meeting we shall make it our purpose to show our good will and appreciation of each other in a spirit of generosity. It has been said that "good fellowship is dependent on good ethics, and there can be no good ethics without a proper consideration of the *other fellow*."

We assuredly can not perpetuate such a spirit among ourselves by the application of David Harum's golden rule in a horse trade: "Do unto others as they would do unto you—and do it *fast*."

I see no good reason why we should not unite upon some basis of mutual protection of our rightful interests.

I do not know that a uniform scale of fees could be established; perhaps it would be a good thing if it might. At any rate, it seems that some unnecessary evils should be abolished.

When a patient desiring an artificial denture presents a mouth

from which the last tooth long since disappeared, we charge for that service our usual fee.

Another patient presents a mouth which for uncleanness beggars description. Now, gentlemen, why, in the name of simple justice, should we, because of an unholy custom, be compelled to clean out that mouth and deduct our charge for the operating from the price of the plates?

Again, it is the custom with many to extract, using cocaine without extra charge. Cocaine is an expensive drug, we assume more or less risk of toxic effects, and we spend considerably more time in the operation and in disinfecting our instruments. Also, from a professional standpoint, what I believe is a greater evil—we are educating the public to *expect something for nothing*.

Likewise, how many times have we heard an impecunious patient protest: "Why, Dr. — did not charge for cleaning my teeth when I had other work done." And, even yet, we sometimes hear that Dr. thus and so "threw in the root fillings" when crowning a tooth—and is it not fair to suspect, in the average case of that kind, that they *were* "thrown in"?

Isn't it time we should come to an understanding among ourselves and then *stand together* in charging for our services what they are worth?

I would like to ask a discussion at this time, or some later period, on the subject of deadbeats: Shall Timothy Jones exhaust his credit with my neighbor dentist, then come to my office with a bold and prosperous air, pay up for the first sitting or two as if money were an incumbrance to him, then—because of my innocence and child-like faith in him—leave me to hold the sack? Or, perchance, after sending sundry statements and pointed letters and, perhaps, threatened suit, may succeed in getting my fee after spending almost its value in time and postage?

Brethren of Kankakee, is your "Terms Cash" a success?

Gentlemen, is it possible for us to provide, through our Society, a means of identifying at least a considerable portion of the *genus homo* species *dead beat* with which our respective communities are infested? Not that I have been especially unfortunate—my percentage of loss has been comparatively small—but why should we lose at all if it can be prevented?

I spoke of education of the public. What man present does not daily see frightful ravages of decay in mouths whose owners decline to have any services except that to relieve the immediate pain?

This attitude, it seems to me, may be attributed largely to a woeful ignorance of the real importance of *saving* the teeth, and to an ignorance of what service we are able to render. And while these otherwise intelligent individuals expend money lavishly on passing pleasures and needless luxuries, our just fees are considered exorbitant and classed with gold brick investments. I ask the question, fellow dentists, how may we most quickly bring people of our respective communities to a sense of their inconsistencies in these respects, and to an appreciation of our services, so that while the number of dentists may rapidly increase—as it doubtless will—a corresponding increase in the demand for our services will be established and there will still be an abundance of work for all who deserve patronage.

A word concerning clinics. Shall I, if I have what I believe to be an original idea whose application will simplify or greatly reduce the time required to perform a dental operation, I say, shall I keep that knowledge to myself, fearing some neighbor will become a better dentist and outstrip me in the profession? I think such an attitude should brand one as a man of small caliber. Of course, there is no present member who would come to these meetings with the selfish desire—sponge-like—to get all he can and give nothing in return.

There is no one of us who has not an idea, or some time-saving or labor-saving contrivance, which he believes is just a little superior to anything he ever saw or heard of elsewhere. Let us have the demonstration of such ideas—lots of them—though they may be simple or of seeming minor importance. Our daily work is made up of numerous details and the simplifying of those details is one of the great problems of our profession.

PROCEEDINGS OF SOCIETIES.

ILLINOIS STATE DENTAL SOCIETY, MOLINE, MAY
9, 10, 11, 1905.

DISCUSSION OF DR. BUCKLEY'S PAPER.

DR. ELGIN MAWHINNEY, of Chicago:

Mr. President, it is a little difficult to present any formal discussion on an informal address, but I realize that the nature of the subject matter was such that it could only be presented in the way in which it was, and the value of the address was attested by the interest of those present.

Dr. Buckley kindly left his prescriptions on the line until noon today, and the number of members that were crowding around copying them last evening and this forenoon is the best evidence of the appreciation of his efforts by the Society.

I want to particularly emphasize what he said regarding the combination of tricesol and formalin. It is a combination I have been using for a great many years, and I think that I have spoken of it a number of times. He generously gave me the credit for suggesting it, for which I thank him. I don't know that it was original with me—probably not, as we get these things, all of us, by rubbing against one another, a little here and a little there, and because we give utterance to an idea first does not always prove that it was original with us.

The address can only be fully appreciated after it is thoroughly studied and digested. There were so many things presented that no one could follow them and carry the ideas in his mind in so short a time. Dr. Buckley has the double advantage, as you know, of being a pharmaceutical student before he was a dentist. That, together with his work in the chemical laboratory and school, and in teaching the subject of materia medica, has especially qualified him to talk upon the subject. The combination of drugs, which he accredited to Dr. Talbot, iodine crystals, iodide of zinc, glycerine and water, is one that I have had the greatest satisfaction in using. Now that all of you have the formula in practical shape, and by that I mean in such shape that you can take it to the druggist and get it filled, I hope all of you will make use of it in the treatment of certain forms of so-called pyorrhea alveolaris. You will find that the alterative effect of

the iodine, the astringent effect of the iodide of zinc, and the germicidal action of both make it a most desirable combination. (Applause.)

DR. CLAUDE B. WARNER, of Avon:

The part of Dr. Buckley's speech that appealed to me more strongly than anything else was that in which he made the statement that no dentist ought to use any commercial preparation of which he does not know the exact constituents. If an accident were to happen, it seems to me that it might be a case of malpractice for a dentist to use such a preparation, especially one containing strong drugs like cocaine or phenacefine, without knowing the amount he is giving to his patient.

DISCUSSION ON THE PAPER OF DR. PROTHERO.

DR. B. J. CIGRAND, of Chicago:

Mr. President: It affords me great pleasure to open the discussion on this scientific paper. There is a statement in a recent work on physics to the effect that "all material and all bodies are compressible," providing you can exert sufficient force upon them. It does not seem that we exert two tons of pressure in bringing the flask together. I for one can not comprehend this, and yet his machine registers that as a fact.

I shall take great pleasure in examining this machine or apparatus tomorrow at the clinic.

I regret that we have not as yet a correct terminology, which we ought to have. We use the terms plaster-of-paris and powdered plaster-of-paris indiscriminately. Powdered plaster-of-paris, when it has been mixed with water, passes through chemical changes, after which it is no longer plaster-of-paris, but something else. We use the terms indiscriminately, just as we employ the terms power, force, pressure and weight indiscriminately. They all mean separate things. You should not say force when you mean power; you should not say power when you mean pressure. These distinctions are very essential because they bring us to a better understanding of the terminology.

The profession would be far in advance of what it is if we in our societies gave greater attention to physics, because almost all we do has for its substructure physics and philosophy.

Furthermore, it is stated in some recent works on philosophy

and physics that all materials are porous, only some are sensibly porous, that is to say, we can see the pores with the eye, and the others are porous by inference, but just the same all materials are porous. Even water is porous, for we can dissolve in it certain salts and not perceptibly increase its bulk, because the salt is lost in the pores. All matter is capable of compressibility. Dr. Prothero has given us a demonstration of the uncertainties of one of the materials with which we work.

Some years ago, at a meeting held in Rock Island, Dr. Black gave us a paper on the changeable, movable conditions of amalgam. Here today we have had a valuable contribution regarding the changing, movable conditions of plaster-of-paris and cements.

I would like to have Dr. Prothero tell us what changes of procedure ought to be made to assure us a more definite and certain way of making vulcanite dentures. I would contribute my idea of it, but that is beyond the scope of the paper. It is to be hoped he will do that on some future occasion.

DR. I. B. SELLERY:

I feel it would be lax on my part not to express my appreciation of Dr. Prothero's efforts, and tell what I know about this machine he has constructed.

It is a kind of relief to get back to vulcanite plates. Most of us are getting out of the habit of knowing anything about them. The older men know about them. I went out to San Diego, Cal., presumably to let dentists out there know the methods we employ at the dental school. I thought I knew how to make vulcanite plates; but the late Dr. Reed taught me the finer points of it. There is just as much art in constructing an artificial denture, a vulcanite denture that conceals our art and looks natural, as there is in constructing a porcelain crown or a porcelain inlay.

For the last couple of years Dr. Prothero has been sneaking away from his office and working on this machine. The first year he simply had an apparatus which would measure the expansion of plaster. A traveling man would come around and say to him, "I have a compound that will not shrink and will not expand." He would say "how do you know you have?" The reply has been: "Because I have tried it." We have put it in the groove on the machine, and we have found out exactly whether it would shrink

or expand, and how much. This year he has added to the spring a device which will tell exactly the weight that is brought to bear upon the plaster-of-paris. It means a lot more to us as dentists than we can think of now. He has shown the probability of distorting the model in closing the flask, of compressing the plaster unevenly. At a certain point it will compress more than at another point. He will work this out in time so that we will find exactly how to obviate that. This is only the start. I think in years to come Dr. Prothero will be remembered as having started an investigation along original lines regarding the expansion and contraction of plaster-of-paris.

DR. HART J. GOSLEE, of Chicago:

We have learned to expect from Dr. Prothero in years gone by, something practical, always. But in more recent years we have come to expect of him something of a scientific nature also. I am sure he was the first to give us scientific experiments in connection with the expansion and contraction of plaster-of-paris, and now he gives us something further concerning its compressibility.

The practical aspect of the question is this: It will teach us how particular and how careful we must be, first of all, in making a model, and the plaster which composes the matrix surrounding it in the flask must be of a high grade, and also further, It should be well seasoned before it is used. Further still, it teaches us to make sure we cut vents or suitable escapes for surplus, and that we exert as little pressure in bringing the flask together as possible, which can only be done by proper heating.

DR. J. E. HINKINS, of Chicago:

I thank Dr. Prothero for his paper. When he read a paper at Bloomington a few years ago the chemical aspects of it appealed to me as they have in his paper today.

Now, sulphate of calcium, CA SO_4 , has its chemical affinities the same as everything else, and if you get sulphate of calcium at a certain temperature, and keep it away from moisture, it does not expand or contract very much; but as soon as it comes in contact with a varying degree of atmospheric moisture it will expand or contract. When we mix sulphate of calcium with water it will absorb 15 or 20 per cent, and change from an amorphous condition to a crystalline substance. When you put pressure on it

and vulcanize with steam, I can say positively that when you open the flask you do not have a crystalline substance, but a granular one. A portion of sulphur in the rubber combines with the sulphate radical and helps to form the sulphide of calcium, and if you have a large amount of the sulphate of potassium, $K_2 SO_4$, in the flask it works out in the vulcanization and makes the $Ca SO_4$ porous to that extent.

DR. PROTHERO (closing the discussion):

In answer to the remarks made by Dr. Goslee, I wish to state that I did not originate the investigations along the line of expansibility or compressibility of plaster of paris.

Fifty-five or sixty years ago certain members of the profession became aware of the fact that plaster-of-paris expanded, but they stopped there without realizing the deleterious effect of such movement or seeking any way to counteract or compensate for this movement.

It was also known, by a few at least, that plaster-of-paris was capable of being compressed, and in the dental literature of thirty or forty years ago we find that precaution was advised to prevent the application of too much force in flask closing.

The profession of today, however, seems to have forgotten or not to have known these facts, and consequently are not exercising enough care along the lines mentioned in the paper.

The flask press furnished by the manufacturers affords too much opportunity for exerting undue pressure in closing flasks, which force, when not properly estimated, results in the errors mentioned.

I do not claim to have originated the experiments in this field, but am endeavoring to carry out some investigations on the physical properties of plaster-of-paris, with a view of obviating or partially overcoming the deleterious properties which are so apparent.

DR. GOSLEE:

Is there anything in dental literature with regard to these older experiments?

DR. PROTHERO:

Nothing definite, with perhaps the exception of the experiments conducted and recorded by Dr. T. L. Buckingham along in the latter

part of the sixties. Dr. Buckingham constructed a micrometer for measuring the amount of expansion, and another appliance for registering the force of expansion. He did not seem to realize the importance of this movement and offered no suggestions as to how to overcome it.

From 1871 to 1880 more or less investigation and discussion occurred on the physical property of expansion. Some remedies were suggested for counteracting or controlling this movement, but the methods suggested have not proved satisfactory in my hands.

As I stated some two years ago, sulphate of potash will control expansion to a greater extent than any other substance so far found, but it has the objection of absorbing moisture from any available source, thus lessening the power to resist compression of the plaster with which it is mixed.

Dr. Stewart J. Spence is manufacturing a plaster which he claims is non-expansive, but which, in the experiments I have conducted, shows considerable contractile, with a limited amount of expansive tendency. This plaster, however, offers great resistance to compression, which is a very valuable and important feature in its favor.

In closing this discussion I wish again to emphasize the fact that less pressure in closing should be exerted upon the flask and contents if accurate results are to be obtained.

DISCUSSION OF REPORT OF COMMITTEE ON DENTAL SCIENCE AND LITERATURE.

DR. C. E. KOCH, of Chicago:

It occurred to me this forenoon, when Dr. Allen read his report, which was a very comprehensive one, that in one phase it was not quite up to date. He referred to the fact that the National Association of Dental Examiners had given pronouncement in favor of either a four years' course of seven months or a three years' course of nine months, and that beginning with the year 1906 they would require graduation from a high school as a preliminary educational standard for admission to dental schools.

Now, a few days prior to the action of the Ad Interim Committee of the National Association of Dental Examiners, the Chicago schools got together and agreed upon a course for themselves of three years, with thirty-two weeks of six days each of actual teach-

ing, in each year. This will give a total number of days of teaching in excess of a three years of nine months academic course, as usually understood, Saturday's being out. When the Examiners' Association notified the Chicago schools of their standard of requirements they were at once informed of the step the Chicago schools had already taken and the association has assured them that this course, so established, will be accepted by them in lieu of either the three years of nine months or the four years of seven months course, the amount of actual teaching being practically the same.

I think it is but just to the gentlemen of the profession who are present that they should know that that is now the condition. I haven't a doubt but that the other schools of the country will fall into this arrangement. The National Association of Dental Faculties will not meet until July, and what may be done there we do not know, but under the law that has passed the legislature of Illinois, the State Board of Dental Examiners here will have power to fix the standard of what constitutes a reputable and acceptable dental course and college. I believe the center of dental education has shifted from Pennsylvania to Illinois, and from Philadelphia to Chicago (applause), and we hope that the dental profession of Illinois will sustain, strengthen and support the three Chicago schools in their effort to unify and harmonize dental educational standards.

DR. TRUMAN W. BROPHY, of Chicago:

Mr. President:

It is very pleasant to have so strong an advocate of dental education as the gentleman who just spoke in regard to the progress that is being made by the schools. We have all heard him discuss questions pertaining to the boards, and today we greet him as a college man.

The statement made by Dr. Koch is correct, and in keeping with the progress that has marked the State of Illinois in a professional way during the last few years. We believe the colleges will also conduct their work in a way to make every citizen feel proud.

In the chairman's report he stated that the course had been cut from four to three years. Probably there never has been in all of the discussion of college matters a question that has been so misunderstood, and has led to so much difference of opinion as

this question of hours of college work. There never has been, and probably never will be a course of instruction in any of our educational institutions conducted according to years of time. When we speak of a college course in years it means nothing that is definite. The course in years would mean college years, which might be called nine months, but when we begin to analyze the course of instruction of nine months, and take out of it the holidays at Christmas time, two or three weeks at Easter time, and then other holidays, like Thanksgiving day, Washington's birthday, Lincoln's birthday, etc., making up, including Saturdays, in the nine months, something like eighty days of time. Some schools have no work done on Saturday, closing the school for the week on Friday night. If we will take the course that has been laid down by the Chicago schools of thirty-two weeks and six teaching days in each week, from morning till night, we find that we are putting in more days and hours of college work in the three years of thirty-two teaching weeks than was decided upon in Milwaukee, in having four years of seven months each. If you will take the pains to count the holidays and Saturdays that come out of the nine months or seven months, and get the actual teaching days, you will find that the Chicago schools have planned to do more work in the three years of thirty-two teaching weeks in each year than was ever before proposed. It is more than any school of nine months or four years has ever done. And so our schools, as the gentleman who preceded me said, have set the pace. Moreover, the schools have resolved, beginning with the course of 1907-08, to require a high school graduation from an accredited school or its equivalent. What I mean by accredited schools are those accepted by universities, and whose students are admitted to universities without examination. Other applicants go before the State Superintendent of Instruction to ascertain if they have an education equal to that. This is an advance over anything that has been done.

Personally, I may say that I have had a resolution on the books of the Faculties' Association for five years, calling for high school graduation, but we have never been able to get it to a vote through some technicality or another. Now that we have established this rule, I believe that all the schools will come to it. High school graduation is not too much to be asked of the young men who seek admission to a profession like ours. (Applause.)

DISCUSSION OF DR. HENDERSON'S PAPER.

DR ARTHUR D. BLACK, Chicago:

There is no line in dentistry that is more difficult to draw than the line that divides the ethical from the unethical man. We have many men whom we are easily able to designate as unethical, and many whose ethical standing no one can question. There are others who occupy all positions between the two and it is impossible to draw an exact and definite line. The man, his surroundings, the customs prevailing in the profession at the time, and the condition of the public mind, must all play a part. As we advance as a profession, our ideas of what constitutes ethical practice will change to correspond. We say a man may print his card, simply his name, address, etc., in a newspaper, but we can not definitely specify the size of type, although it should be modest. As soon as the type used or the space occupied are increased sufficiently in size to make what the printer would call a "display," then that advertisement changes from the ethical to the unethical.

Why is it unethical to advertise? I would answer that it is because professional men are not selling goods, but personal service. If a professional man advertises, he must advertise his personality. This is an egotism which causes rebellion in the minds of fair thinking people and lowers the man in their estimation.

Referring to the items which so often appear in local papers regarding dentists who have attended society meetings, given clinics, etc., I would remind you that we should be charitable in such cases. Oftentimes the dentist has no previous knowledge of such items. The local reporter is required to have so much copy each day and often writes such items without consulting the persons concerned, having obtained the information from a third party.

I would divide the unethical men of our profession into three classes: First, those who advertise dishonestly and practice dishonestly, men who advertise things that they can not do, and who do things that they can not advertise; second, men who advertise in a moderate way, often not appreciating the difference between a profession and a trade, and yet are honest and upright in the operations they perform, who, after the patient comes to them, do for him the best work they know how; third, the "knocker," the man who does not advertise openly, but who is constantly praising him-

self and criticising the work of his neighboring practitioner. This man is in some ways worse than our worst quack. The quack is a liar and a thief, while this man is a liar, thief and a hypocrite. The second man, the "honest advertiser," if I may use that term, is much more of a gentleman than the "knocker." Let us then try to convert the "honest advertiser" and eliminate so far as possible the "knocker" from our ranks. I believe both may be accomplished in a large degree by a closer acquaintance in our local societies.

I do not agree with the essayist as to what constitutes success in dentistry. From the highest professional viewpoint it seems to me that the most successful man in dentistry is the one who, first of all, does the most for the welfare of the human family, either by performing continuously the best operations or giving out results of his work that will enable the other members of the profession to improve the service they render to the public. If there is in addition to this, the business ability to make that service a financial success, so much the better.

The essayist's statements regarding our dental schools are a little too sweeping. While I know that some colleges secure both students and clinical patients by unethical means, I also know of several that do neither. There is as great a difference in our colleges as in the men of our profession. I am certain, too, that many of our colleges are very strict in their entrance requirements, living up to them to the very letter, and that money is no consideration.

I fully agree with him that our schools should teach more of the business of dentistry; not only the ethics, but all things as they affect business success, how to handle patients, how to keep books and records and collect accounts, and how to get patients by proper methods and how to keep them.

In conclusion, I wish to suggest that in each community at this time every year, when our new graduates are entering upon their life work, our members should call upon each one as early as possible and invite him to join in society work and sign the code of ethics before he has time to think of advertising. Get them before they take the wayward step, for it is much more difficult for them to step back again. It is much easier to take that step and lower one's self in the public mind than it is to return to the ranks of the ethical and regain the lost position in the estimation of the community.

DR. C. B. ROHLAND:

Dr. Henderson has given us a very timely paper on a most important subject,—a paper that is entitled to the serious consideration of all present. There is no question but that advertising as the outward expression of commercialism in the profession is a constantly growing evil. It is an evil, however, that I fear, like intemperance to the general community, is bound to be with us in some objectionable form or other at all times, unless there should come a radical change in human nature. All we can hope to do is to battle to keep it within bounds, to create a professional sentiment so strong and repressive that its exhibition will be confined to the self-confessed charlatan and quack.

In this work the college, as Dr. Henderson truly suggests, can exert a most beneficial influence. The college receives the young man when his mind is especially open to impressions. Many of these young men have no preconceived idea about their chosen vocation except that it is a means of making a living—it is merely a business. To many of them the distinction between a trade, a business and a profession have no meaning at all—they know none. Here is fallow ground for the college to work—to sow the right kind of seed and keep down the weeds. They should see to it that the young men should be taught to understand what additional duties they have assumed in taking up a profession instead of a trade. It need not be made a special branch or call for a special chair, but the inculcation of ethical principles should be injected into the lectures of every department. Each professor should make it his duty to urge and guide his hearers into the right path at every opportunity, and he should so act himself that his daily conduct should be but the code of ethics in concrete form.

The distinction between the legitimate and illegitimate in advertising is something exceedingly fine, and so long as there are “many men of many minds” there are bound to be differences of opinion on some of these questions.

I have had my attention drawn during the past year to a number of advertisements, two of which are entitled to some comment.

The first was that of a dentist who put a local advertisement in one of the daily papers in his town. The advertisement was simply a plain business card giving address, business hours, etc., and stated

that special attention was given to porcelain work. The objection urged was that under the code for a general practitioner to advertise a specialty was forbidden. I could not interpret it that way—in my judgment the local was a proper one; it was modest in tone and the announcement that the doctor made a specialty of a particular branch, providing he really did so, and was competent to pose as a specialist, was perfectly legitimate. The objectionable feature in any advertisement, that can not under any circumstances be condoned, is the element of deception. If, in the above case, the dentist knew nothing or comparatively little about porcelain work, then he was not competent to do it, and he lied to the public, and the advertisement was an offense against the code. If, on the other hand, he was familiar with porcelain, had experience enough to make him competent to do good work with it, he was enabled to say so, and still practice generally.

The dentist who is especially interested in any branch of his work, and feels competent to do good work in it, may live in a community where there is not enough of such practice to take up his time, or to warrant him to drop all other practice. To deny him the privilege of making porcelain or bridge work or orthodontia a special feature in his practice, and to say so, would be, in my judgment, an unwarranted refinement of the code.

So far as the morality of it is concerned, it makes no difference whether the advertisement takes the form of a sign on the door or the window or a card in the paper or a concert program, or whether it is by word of mouth, so long as it is modest, truthful, does not offend against good taste, and does not reflect on others, it is legitimate and should not be construed as an offense.

The second advertisement is of another character. This also is a local, but is not in the form of an advertisement. It appears as a local item of news, and its flaring headlines would indicate it was supposed by the management to be of enough interest to the public to warrant its conspicuous setting.

POPULAR DENTIST MOVES.

DR. ——— WILL OCCUPY NEW AND LUXURIOUS APARTMENTS.

Dr. ———, the popular dentist, who has been occupying rooms on the ——— of the ——— has removed his office to ———,

where he has a suite of rooms elaborately fitted up, in which to receive his patrons.

The doctor has been in —— for over —— years, and has made a host of friends by his courtesy and ability. He has made a specialty of filling teeth with porcelain, which is the latest acquisition in dental science and fashion, and heartily deserves the commendation he receives from the best people of ——.

Dr. —— has been practicing for —— years, and previously was a graduate of the —— of —— and also completed the post-graduate course in ——. The public is glad to note his prosperity.

Now this is an advertisement of the most insidious nature. A board of censors would have difficulty in picking out of that advertisement anything contrary to the code of morals.

A careful examination of all the statements made would perhaps not disclose one that is actually untrue. The dentist is probably popular, his apartments may be luxurious and elaborately fitted up. He has undoubtedly made a host of friends by his courtesy and ability. He probably has made a specialty of porcelain, and he probably does deserve the commendation he receives from the best people in his place. And yet the ensemble has not a clean professional ring to it. It has a distinctly "dental parlor" flavor that offends the finer professional instincts. Its effect is bad, either as an advertisement or as a piece of news.

If it is an advertisement for which the doctor admits his responsibility, then the self-praise is in bad taste, and there is the element of deception, because the doctor does not boldly stand for it, but issues it as though it were an unbiased editorial tribute to his perfections. If, on the other hand, the doctor should claim, as he probably does, and perhaps truthfully, that he was not responsible for its publication, and that he knew nothing about it, this will relieve him, but does not mitigate the unethical character of the advertisement itself, and its evil influences. The fact remains that the press usually will not publish such advertisements without a quid pro quo. And the fact remains, too, that the materials for the motive must have been obtained from some one—certainly not from the doctor's competitors,

and no matter how much he may protest his innocence, many of his professional neighbors will not believe him—therein lies the great harm of such advertisements. The higher the standing of the doctor, whether innocent or guilty, the greater the harm. His neighbors will argue, if Doctor Blank, who stands so high in the profession, can resort to such methods, certainly it must be all right under the code, and thereupon feel justified in doing the same. Or they will, as is more likely, vote the code a sham, condemn all others who really believe in and honestly live up to the code, as liars and hypocrites, and thus is the noble cause of right living brought into disrepute. Men of influence, of standing, of experience in the profession, have an immense responsibility on their shoulders in this respect, and they should be particularly careful because of their influence for good or evil.

The most blatant and lying advertisements of the acknowledged charlatan or quack are comparatively harmless for evil—they only harm themselves and their victims—the others tend to lower the moral tone of the whole profession.

DR. E. F. HAZELL, of Springfield:

No one can dispute the fact that we are benefited by attending a gathering like this and hearing such papers as the one just read.

We must combat the evil of advertising or our profession will become degraded instead of elevated. Our colleges, as institutions, are no doubt conducted on a principle that could be changed, but I am sure that the instructors as individuals do not teach advertising.

The essayist's statement with reference to the preliminary educational requirements is no doubt true. We all feel that we belong to a noble profession, an educated profession, above the common level. If you wish to know how well educated we are considered to be by other professions, let one of you try to matriculate in a medical school, and you will soon find out what your degree of dentistry is not good for. Yet we consider ourselves a branch of medicine—specialists, if you please.

Advertisers do not make good; they rarely ever produce the goods they advertise to the public. A man who naturally is commercially inclined rarely ever will be a true professional man. But, on the other hand, it will not do to lose sight entirely of the commercial end of dentistry. It is my opinion that we, as a profession,

would be better off financially if we were at times a little more commercially inclined.

Our offices should be kept neat and clean, and our patients will soon notice when the office has a clean, wholesome air about it, and when it has a dusty, dingy appearance.

DR. G. D. SITHERWOOD, of Bloomington:

I was greatly interested in this paper, and I wish to say that I took an active part in the organization of the McLean County Dental Society, in which this subject came up, and was thoroughly discussed. Quite a number of the men who were admitted as members under the plan of reorganization had standing advertisements in the daily local papers which were considered unethical. I took the position that it was best to bring this matter of advertising up in the local dental society and have it discussed freely and in a friendly way, because it is largely a matter of education with some of these men. We discussed the subject freely, and passed a resolution that it is unethical to advertise in the local papers, or even in the manner suggested by Dr. Rohland, namely, that one is a specialist or devotes special attention to any single part of dentistry, except in the same way that a physician advertises that he gives his exclusive attention to surgery, to diseases of women, or to diseases of children, so in our society we decided that it is ethical for a man to advertise himself in the newspapers in a plain professional card to the effect that he gives his whole attention to one special branch of dentistry; otherwise it would be unethical to say, for instance, that he administers gas, or that he puts in porcelain inlays. Every one resolved to live up to this resolution. I think this would be a good rule for the local dental societies throughout the state to adhere to.

DR. J. W. CORMANY, of Mount Carroll:

I have not said anything at this meeting so far for publication, and I do not know that I am going to say very much now. However, I wish to state to some of the old gray-headed members, who are prone to read the rules and the riot act to the young men who get their names before the people, that these younger men must do something in order to get patients. How are they going to do it? In a twenty-story building in Chicago, confined in the office all the time, and never known outside? I know very well it is a hard matter for a young dentist to get a start, and the only way to do it is to begin

practice in a small town where he knows everybody. His object is to get known to the people. I do not believe there is a bald-headed or a gray-haired man here but what has done more or less advertising at some time or another, and in some way or other. We are solicited from time to time in a country town to put our cards in the local newspaper. We turn down a great many of such requests. If Dr. Smith locates in Mount Carroll and nobody knows him except the other dentists there, how is he to become known unless he advertises in some way? We ought to let a young man have a chance to let the people of the county in which he locates know that he is a dentist, and a good one, a graduate from some dental college recognized by the Association of Dental Faculties. If a young dentist puts out his sign that reads, "John Jones, Dentist," anyone who walks along the street knows that he is a dentist by reading his sign, but they do not know whether he is a good dentist or not. They naturally go to the other dentist who has been living in the town for years and inquire about Dr. Jones. He may say that Dr. Jones is a graduate of the Blank College of Dental Surgery, and he is a good dentist of the kind such as they turn out there. (Laughter.) You may laugh, but what else can I say? I am personally acquainted with some of the graduates of that college, and I have reason to believe that they are good. When a young man locates in my town, who is a graduate of a well-recognized dental college, I consider it my duty to make him welcome, because I have been practicing dentistry there a long time, and my mark is made. I think we need to be a little careful as to how closely we draw the line in regard to the young men. We should let the people know who these young dentists are, and whether they are good ones or not.

Tell me, ye winged winds,
That round my pathway roar,
How long must a dentist sit
And watch his office door?

To see a patient come in, without advertising?

DR. A. M. HEWETT, of Chicago:

I think I am in a position to make a defence in behalf of the dental colleges, never having occupied a chair in one, although very often urged to do so. I have had this said to me time and again: "Doctor, why don't you raise your voice against the competition we

have to meet from dental colleges that are filling teeth by the million?" My reply has always been that it is an absolute necessity, in the first place, and then the reputable colleges do not pretend to do what they do not do. They do a vast amount of good which ought to be done for nothing for the poor people. If there is any fault to find, it is that they sometimes do work for members of the community who are able to pay and ought to pay more than the value of the materials used.

As to advertising, I will only say a few words. I do not think I have ever seen the advertisement of a reputable dental college in a daily newspaper. There are colleges by name, that do not grant diplomas, that advertise as colleges to draw patrons. These are not to be considered. I never saw an advertisement from Dr. Brophy's college, from Dr. Black's college, from the University of Illinois, or from any reputable dental college, that was objectionable. If these colleges advertise at all, it is generally in dental journals of good standing. But to whom do these dental journals go? Not to the people at large, but to the dentists and dental students. They have a right to tell the young men who want to be dentists that they do so and so in their colleges. I do not consider that unethical, and this fretting of young men against colleges is what I want to protest against.

DR. EDMUND NOYES, of Chicago:

I only want to refer to one or two matters. There is great plausibility and some reason for the position taken by Dr. Rohland in the discussion, in respect to the advertising of general practitioners to do such a special line of work as porcelain inlays. The plausibility lies in this, that these operations are comparatively new, and that at the present time not all members of the dental profession are making them, so that possibly it need not be quite taken for granted that a man makes porcelain inlays as we would take it for granted that he would make amalgam fillings, rubber plates or gold fillings. That is the only reason I can think of in justification of the stand Dr. Rohland has taken. I prefer to stand as the medical profession does, upon a more restricted use of the word specialist. The word specialist, as applied to a practitioner of medicine, or of dentistry, has a technical meaning. It does not mean that a man is doing everything pertaining to his profession, but wishes especially to announce

that he can do some one of those things, or has a preference for some one department of practice. The word has a restricted meaning, namely, that practice is confined to one class of cases to the exclusion of all others, and this is the meaning recognized by the two professions. That being the case, I do not see how we can use the word specialist in any other sense. The man who gives special attention to crown and bridgework, or to porcelain inlays, and has a general practice also, should be content to have the fact made known that he has had a sufficient dental education to give him the professional standing which implies that he can do all of these special things. I think there is a great deal of truth in what Dr. Black said about the difficulty of drawing exact lines as to what is ethical and what is not ethical in matters of publicity. Like a great many other things in this world, it is a case in which "The letter killeth and the spirit maketh alive," and there is no fundamental basis of safety and soundness for professional advertising except the basis of honesty and of good taste, for after all a good many of these advertisements must be judged on the ground of taste, and the profession does judge them and approves or disapproves them on the grounds of good or bad taste, as well as on the grounds of honesty or dishonesty.

Another thing has been said that comes nearer the center of this subject, and is the fundamental objection to professional advertising. The professional man has nothing to advertise but himself. You may advertise and describe the good points of a horse, or a house, as well as you choose. You may do the same thing as regards dry goods. But when a man says in an advertisement, "I am a handsome man, I am honest, I am a well educated man," etc., etc., there is no one of refined tastes and sensitive skin who does not recoil against it instinctively. It is easier to put these things so that we recognize them by instinct than to get at the sounder fundamental reason for them.

There is one aspect to this question that has not been touched upon, and that is propriety in different localities. For instance, the question of a sign on the door, as an ethical question, is a different matter in New York from what it is in Paris. It is a different matter in Chicago from what it is in New York. There are questions like this, of custom and fashion, but they are of such constant custom that they have become practically obligatory, if a man wishes

to keep his standing among his fellows. In Chicago, for instance, it is regarded as improper as well as useless for a man to put his business card in the newspaper, "Doctor So-and-So, Dentist, at such an office in such a building," but in the small towns the question has a different aspect for several reasons. In the first place, it is desirable that the public should know that a man is engaged in the practice of dentistry, and where they are to find his office. It is customary for all dentists, lawyers and physicians in some of these towns to have their professional cards in a local newspaper. In the next place, every citizen in such a town feels under obligations to support his local paper, which may have considerable hard sweating to maintain a good newspaper in a little town, and there is a demand for little advertisements showing public spirit to maintain that newspaper.

DR. J. N. CROUSE, of Chicago:

I have always had peculiar ideas about advertising. But I believe in it. I have had many young men talk to me and say, How did you get started? How did you get your reputation? How did you get the people to come to you? After I attended a brief course of lectures at college, I went back to the town I had always lived in, and put out a shingle. By the way, the only dentist who ever filled any teeth with gold in that town went to the war and got killed, so that when I began to practice there no one was filling teeth. The first filling I made was one of considerable size, for which I charged \$5. In two hours there was probably not a citizen in that town who did not know about that tooth and the price I charged. Of course, I made a good filling. I have seen that filling within two years.

The first thing I tell these young men is to be prepared to do a thing right, and always do it right, and stick to it whether you get any fee or not. Keep the fee out of consideration in your professional conduct. I would like to see the custom established so that we did not have to think anything about fees. I do not like to make out bills or to collect them; but I like to get the fees just the same.

If I were going to outline a plan for a young dentist to get into a good practice anywhere, it would be to get himself well prepared, and then when he performs his operations well and charges enough for them, somebody will talk about him. I have advertised in that

way all my life. I am well aware that it is a difficult matter for a young man to get a start. When he does make a start, and gets the first patient, he should try to make such an impression upon that patient that he or she, as the case may be, will go to others and be influential in sending him other patients. I have had many patients come to me in that way. Let me instance one other case.

When I first came to Chicago, during the first few weeks I was not overwhelmed with work. (Laughter.) Sitting at the table in the hotel where I boarded, were a couple of old codgers, and while eating one of them broke off a good gold filling. He picked it up and said, "I have broken off that filling." The other fellow said he knew a dentist in town, and after dinner they would go to his office and see whether they could not get him to put in a new filling. This was Sunday. Monday morning, when I came down for breakfast, the proprietor of the hotel said that he wanted to introduce me to a man who had been to a dentist on the other street, and who had offered to put in a filling for ten or fifteen dollars, but the man did not think he could do a good job for that small amount. I was introduced to the man by the proprietor of the hotel, whose daughter I had previously filled some teeth for, and the man asked me whether I could do a good job. I replied, "Yes." After I finished my breakfast he went over to the office with me, and I assured him that I could make a filling that would last. He asked what it would cost, and I told him from forty to fifty dollars. He said that this seemed a pretty big price, but that if I did a good job he did not object to paying it. I told him that I could do a cheaper job than that if he wanted it. (Laughter.) I took a long time to put in this filling and had one or two good operators come in and see it during the day, among them Dr. Cushing and Dr. Swain, as I was in the same building with them. A day or two later there was a meeting of the Chicago Dental Society, and the dentist whom this man visited on Sunday was present. It was noised around by the other fellows that I had secured fifty dollars for putting in a filling which the other dentist offered to do for fifteen dollars. This dentist came up to me and said, "I want to ask you whether you got fifty dollars for inserting a filling for a man who consulted me, and for whom I offered to do the work for ten or fifteen dollars?" I replied, "Yes,

I did." He then shook me by the hand heartily and said, "I want to welcome such a man as that to Chicago."

There is a good deal to be said in regard to this question of fees. **Everybody** can not pay good fees. I have had to work lots of times for nothing, and I want to say that some of the best friends I have ever had are those who have paid me but small compensation for the work I have done for them. They appreciated the work, and have thanked me profusely, and I have secured other patients through them. That is the way to advertise. I believe in it.

DR. HENDERSON (closing the discussion):

I am very thankful for the discussion which my paper has elicited. I am not in the habit of writing papers, and my principal object in writing this one was to bring out, if possible, a good discussion.

One of the gentlemen (Dr. Hewett) spoke in defense of the dental colleges. No defence of the dental colleges as colleges is necessary, but there is this about it: We naturally think the colleges that are members of the National Association of Dental Faculties are reputable. One of the colleges I mentioned in my paper advertises itself as a member of the National Association of Dental Faculties, and that college *advertises* what it can not deliver. We should condemn any and every college, any and every practitioner who puts out such advertisements as I have mentioned. It is the hypocrite that hurts the churches; it is the hypocrite that hurts the dental colleges, and it is the hypocrite that hurts our societies. Getting your name in a paper may not be hypocrisy.

If I advertise in the papers and lie, it is hypocrisy; it is dirty, and that is the thing we want to frown down.

The point was made that a man who gets the largest fees is not always the most successful man. On the other hand, the man who is successful may not or does not get large fees. There may be exceptional cases where a man gets a larger fee than his work is worth, but he is one in a thousand, with a strong personality. The man who gets the largest fees in his locality regularly must have ability as a dentist that the public recognizes, or he could not get such fees.

The knocker is another one we should condemn, particularly the man who will say that Dr. So-and-so did this, and Dr. So-and-so

did that, and Dr. So-and-so charged such and such a patient so much, and he will charge you a lot more. Such a thing is going on regularly. It should be stopped.

There are exceptions to all rules, but we should maintain these rules, and get others to live up to the high standard that our calling demands.

AMERICAN DENTAL SOCIETY OF EUROPE, GENEVA,
SWITZERLAND, APRIL, 1905.

DISCUSSION ON DR. W. MITCHELL'S PAPER, "WHERE DO THE PUBLIC
COME IN?"

DR. N. S. JENKINS

Had been deeply interested in Dr. Mitchell's paper, but not having read it carefully beforehand, did not feel in a position to discuss it with great intelligence. He was grateful to Dr. Mitchell for the incisive way in which he stated very important facts, and the existence of dentistry as an independent branch of the medical profession was an exceedingly important fact. The great advance made had been unquestionably due to the fact that dentists had been thrown on their own resources and had only received step-motherly treatment from the elder branch of medicine. That they had attained to the position of a branch of the medical profession, recognized throughout the world, was largely due to the men to whom Dr. Mitchell had referred. Their memory was honored, and dentists would never cease to be grateful for the way in which they had laid the foundations broad and deep upon which later generations had built. As for the conditions of practice in Europe, he thought Dr. Mitchell was extremely competent to speak on the subject. He himself felt very highly the injustice of the dental profession being under the tutelage and control of the medical profession. Moreover, it was as absurd to admit a general practitioner of medicine to the practice of dentistry as it would be for a dentist to be admitted to the practice of gynecology or ophthalmology, or anything else. Those were absurdities which would pass away, but they would only pass away with time, and with the dissemination of that enlightenment, which he was proud to say, the American Dental Society was causing throughout all Europe.

DR. W. MITCHELL

Said there was much that was left out of the paper, but his views could be read between the lines. He wrote the paper only with the view of promoting some little discussion. He had already enjoyed having the opinions of many of his friends with regard to the matter, and he did not think he was at all alone in his views. There was no question but that there were a lot of unnecessary exactions with regard to men entering the dental profession. There were plenty of good men who, with a little more consideration at the outset of their career, would become ornaments to the profession, but who were debarred by not having the sinews of war. A great many dullards were allowed to come in and many good men kept out. On the European side of the Atlantic a man's father arranged what a boy's profession should be, and he thought it was wrong for a man to be thrown into a profession which by nature he could not adorn. In connection with the disadvantages of a good deal of European educational methods the cramming system was very prominent. The "coach" was a benefit to the man, but a curse to the profession of medicine, or dentistry. A man went to his examinations trained as an athlete sent up for a race. When he had finished with his examination his information acquired under such a system left him as quickly as it came, and he believed that a system of continued examinations throughout the course would benefit a man much better, even though he did not know so much in a hearsay way. A man who knew his specific work thoroughly as a ground work was better qualified than a man who was able to pass wonderful examinations by the assistance of a "coach." A man got rusty soon enough, but such a man would rust much more quickly. He did not admire the "coach" system. Going in for a long race required a long training, and a man was better able to take up special subjects a little later on in life—a young man for the sprint and a middle-aged man for a stayer. That also applied to the profession. There were a lot of things a man could take up later on in life to advantage when he had his mind better balanced and capable of absorbing what was necessary and rejecting what was unnecessary. A man who went on taking degrees until he was thirty years of age and then started work was more likely to become a practical failure than a man who had devoted less time to his books and more to the practical application of facts.

DISCUSSION ON DR. YOUNGER'S PAPER, "PYORRHEA ALVEOLARIS IN THE TIMES OF THE PHARAOHS AND THE PRESENT EGYPTIANS."

DR. N. S. JENKINS

Opened the discussion by reading the following short paper: The glowing East has always been the home of romance and mystery. Under modern research the romance still remains, but the mystery is slowly disappearing. We now know that the Palace of Midas and the Labyrinth did exist, that Alexandrian scholars had a complete system of stenography, and that Homer sang of a real Troy. The most impressing of all is the proof of the essential continuity of mind in all ages. When, some years ago, upon the unusual subsidence of the water of a Swiss lake, Jade ornaments and implements were found where the ancient lake dwellers once lived, how were we thrilled by the thought that this rare silicate, unknown to Europe, had been brought, in their wanderings from Asia, by our Aryan ancestors! But in a famous letter to the *Times*, Max Muller reminded us that far more wonderful was the fact of our using in our daily speech modified forms of the numerals of Ancient Sanscrit. Literature and tradition shows us that the dwellers on the banks of the Ganges or the Euphrates or the Nile or the Tiber were swayed by the same mental and moral influences, excited by the same ambitions, inspired by the same loves and hates, and stained with the same crimes. It has remained for Dr. Younger to show us that mankind throughout the ages has been united in a common brotherhood of suffering.

Many years ago I came to Athens, bearing a letter of introduction to the King. His majesty asked me what I wished especially to do in Athens. At that time I had made a few researches in ethnology, and accordingly I asked permission to examine the ancient skulls in the museums. As the museums were uncatalogued and sadly lacked arrangement, the King graciously appointed an archæologist to lay out for me the material I desired. Every morning for some days I had opportunity to study and measure a number of skulls, some of which ranged back to the eighth and ninth centuries before the Christian era. I need only mention that I was impressed by the wonderful fidelity to the Greek type shown through all these centuries and down to comparatively modern times. But everywhere there were found upon the earth evidences of the ravages of decay

and of the destructive influences of calcareous deposits. At that time we knew nothing about pyorrhea, but I now recall, since Dr. Younger has pointed out to us its characteristics as shown upon this Egyptian lower jaw, that I observed similar conditions on some Greek jaws.

One morning my archæological friend brought me two skulls which had just been found together in a splendid sarcophagus, and which he said were probably of a noble Athenian lady and her favorite female slave, and quite certainly of the time of Hadrian. It needed only a slight observation to determine that the skulls were Greek and Roman. The graceful Greek skull was that of a woman of some thirty-five years of age, and the massive Roman skull was that of a powerful man some five years younger. As they were buried together it was possible to imagine the world-wide romance of a man born to command becoming the slave of a fascinating woman older than himself. When I pointed out the unmistakable character of the skulls the archæologist said that would account for the presence of only one set of female ornaments, which he then showed me. I remember examining with special interest the teeth of this Greek woman, beautiful in shape and very regularly set, and observed that they were deeply affected by tartar, through which they would certainly have been ultimately lost. I reflected then that it could not have been possible that dentists existed in that luxurious age, since it was not conceivable that this beautiful and highly placed woman would have risked so great a loss had help been obtainable. In the limited number of Egyptian skulls which I have examined no evidence of any treatment other than extraction has ever been observed. Once, indeed, the curator of a museum showed me what he called a gold filling in the upper central of a mummy, but it proved upon examination to be a fragment of gold leaf, such as embalmers often placed over the face of the mummy, which had become attached to the surface of the tooth.

Our thanks are due to Dr. Younger, to whom we owe so much already of our knowledge of the character and treatment of pyorrhea, that he has made this valuable contribution to the history of this trying and almost universal disorder.

DR. W. E. ROYCE

Thought it was an important matter to investigate the subject and

understand more clearly that the tales of fillings in Egyptian teeth were fairy tales. Some years ago he read an article in a paper to the effect that a mummy had been discovered 4,000 years old with a gold filling in a tooth and the unpaid bill of the dentist in his pocket, but he never believed it. Some little time ago one of the prominent operators in New York wrote to him asking him to go to the British Museum and examine the mummies to see if there were any gold fillings in the teeth. Instead of going himself he wrote to the curator of the Egyptian department asking him if he had ever seen any fillings in the teeth of the mummies under his care, and the reply was that he had never discovered any. There were mummies in the museum that had never been unwrapped, but in those which were unwrapped he had never discovered a gold filling. The curator had also seen thousands of Egyptian skulls, but had never met with any evidence of gold having been used as a filling material amongst the Egyptians.

DR. N. S. JENKINS

Said some time ago he received a letter from a very intelligent patient resident in Bohemia, saying that on his estate had been discovered a pre-historic man, probably a Tusker, and in a tooth in the lower jaw there was an unmistakable filling, and he offered to send the tooth for a consideration. In the course of another week he received another letter from him saying it had been discovered on investigation that it was a piece of colored earth which had fallen into a cavity in the tooth of the lamented departed. He remembered also having once a visit from a very intellectual woman who had been subject to an accident while visiting the ruins of Barabak, a tooth with an elaborate gold filling having fallen out. She determined to play a trick on some future archeologist investigating the ruins and carefully buried it in a very obscure spot, where it might be subsequently discovered and used as evidence that the art of dentistry was thoroughly understood in that ancient civilization. Very many such incidents might have occurred. In a number of Egyptian skulls he had examined with very great care he found no evidence whatever of any dental treatment of any kind except occasionally evidence of extraction.

DR. W. MITCHELL

Said that a few years ago he was in Carthage and undertook some

slight investigations to see if he could secure some teeth of the early inhabitants, and he succeeded in getting quite a number. He looked to see whether there was evidence of a deposit upon the roots of the teeth which would indicate the condition of pyorrhea, but in all the specimens he found no evidence and only discovered one buccal cavity and two specimens of erythematous teeth in two cuspids. He noticed, as in the specimens shown by Dr. Younger, the wonderful amount of attrition arising from the thorough mastication of the food, which undoubtedly contained grit and sand. In all cases, except in very young teeth, the teeth were worn down very markedly, in some cases almost half the crown being worn away by attrition. He had seen similar evidence in specimens of very old monkeys that had lived a great many years in captivity. He was unable to secure any of the jaws, and therefore had no facilities for studying the alveolus, but he found no deposit on the roots. The teeth might have been from two to three thousand years old and were in a splendid state of preservation.

DISCUSSION ON DR. KELSEY'S PAPER, "CORUNDUM WHEELS IN DENTAL SURGERY."

DR. MONK,

In opening the discussion, thought it was rather regrettable Dr. Kelsey had given the impression in the title of his paper that his remarks were to be confined to corundum wheels, apart from any other kind of wheel. He presumed Dr. Kelsey would admit that if the sharp angles were ground away he did not care whether it was a corundum wheel or a soap-stone wheel.

DR. KELSEY

Said that was so.

DR. MONK

Thought what had been said was very true. It was an everyday matter in practice by a few simple strokes of a wheel to gain the everlasting gratitude of patients who were suffering from such troubles as Dr. Kelsey had mentioned.

DR. ROYCE

Observed that to a certain extent other dentists as well as Dr. Kelsey used the wheel in a somewhat similar manner. Patients continually came to him from other operators, and many of his patients went to other men to get their teeth touched with the wheel. It made all

the difference in the appearance of the patients. He thought dentists too often forgot what they could do for the personal appearance of a patient with a slight touch of the corundum wheel or sand paper disc.

DR. SCHAFFNER

Said it was one of the specialties of Dr. Dean of Paris to restore the esthetic line of the mouth by means of grinding, and he had been very much struck with the good results obtained. Certain lines would give the teeth an aristocratic look, and he thought dentists should cultivate the art of finding the correct shape for the teeth. A line slightly one way or the other would have a great effect on the general appearance.

DR. HIRSCHFELD

Pointed out that in a paper he had the honor of reading to the society last year he insisted on the necessity of getting favorable conditions before taking impression for a porcelain filling, and the best way of doing it was to give a slight touch to the lower or upper teeth and do away with apposition before taking the impression.

DISCUSSION ON DR. SCHAFFNER'S PAPER, "PLATE FILLING OR PARTIAL CROWNING."

DR. KELSEY

Asked with regard to the permanency of the work.

DR. SCHAFFNER

Said he had seen cases twelve years old. The permanency was in proportion to the thickness of the gold and the way the cavity had been prepared. He thought it was more permanent than most gold fillings. In a cavity with sharp angles there was always the danger in the act of mastication of breaking away the fine edge, but with his system that danger was done away with. There was no fear of the edge giving way, the only fear being that the plate might be raised somehow or other and allow a leakage, but if leakage did take place there was always a layer of hard cement underneath the plate and the patient might go even as long as six months before seeing a dentist without running any risk of fresh leakage. He had been told it was a retrograde step, but he preferred to sacrifice something of appearance for greater utility. He had had failures, but less than with any other work.

DR. T. G. PATTERSON

Said he had seen much of the work during the last eight or ten years and recently a bridge with one anchorage made seven years ago by Dr. Schaffner. He had seen no failures. Dr. Ames had told him he had made a good many and that his failures were much less than with gold fillings. He desired to know what failures might occur at the cervix.

DR. SCHAFFNER

Said failure at the cervix depended on the difficulty of getting at the place. Such failure would be generally bulging out of metal. Sometimes work had to be done 2mm below the level of the gum where a gold filling could not be used, but the plate could be sent down under the gum and the cavity closed. The failures were caused more by irritation of the gum than leakage or displacement.

DR. T. G. PATTERSON

Said Dr. Schaffner had given him a few instructions about a year ago, and since then he had used the method with great success.

DR. GUYE

Said it had been his privilege to see a great deal of the work and he had always found it satisfactory. He did not quite know how Dr. Schaffner adjusted the gold, but his own method was as follows: He first prepared the anchorage and used a little pin turned on a lathe, which was prepared by his workman in considerable numbers of all sizes and lengths. When necessary he first made a contour by pressing contouring pliers into the gold. When the gold was fitted to the tooth he took a piece of soft wax, melted the wax in the concave part of the little filling, and pressed it into place.

DR. SCHAFFNER

Said that was his method. He laid stress upon the supporting of the edges of the plates, and said that two edges could be easily supported by soldering the retainer as near the edge as possible.

DR. GUYE

Observed that like everything else, one had to use one's judgment in the method. He only used it in special circumstances where he would not use a gold inlay or porcelain inlay or gold filling.

DR. SCHAFFNER

Said that as far as time was concerned he frequently did the whole of the work in a quarter of an hour.

DR. WETZEL

Thought that durability of the method depended a great deal on the cement. He thought it was better to fill the cavity first of all and then build upon it with the gold or other material. Some years ago he began to fill his cavities with cement and build on it cohesive gold while the cement was sticky and soft, and it had answered excellently.

DR. HIRSCHFELD

Said the method was absolutely new to him, but it seemed to him that a conscientious dentist would prefer to put in beautiful porcelain inlays.

DR. SCHAFFNER

Did not think it would take the place of porcelain, but should be used to fill a gap between porcelain and other fillings.

The remainder of the meeting was occupied with the following demonstrations by **DR. E. J. WETZEL**:

(a) "Sharp's apparatus as a means of preparing accurately fitting enveloping backings to porcelain molars and bicuspidis."

(b) "Preparation of telescoping crowns with same apparatus."

DR. PAUL GUYE demonstrated on endodiascopy or internal radioscopy.

**THE SOUTHERN WISCONSIN DENTAL ASSOCIATION,
RACINE, MAY 30, 31, 1905.**

DISCUSSION OF DR. ROBERT GOOD'S PAPER ON PYORRHEA ALVEOLARIS.

DR. B. C. CAMPBELL, Lake Geneva:

Mr. President and Gentlemen of the Southern Wisconsin Dental Association:

I believe I voice the sense of this association when I say we are very grateful to Dr. Good for presenting this valuable paper, so terse and to the point, coming as it does from one who is so successful in the treatment of this disease. We are told by those who have years of experience that about 90 per cent of our adult patients have this disease in some stage or other and if this is true it behooves us to learn how to deal with it satisfactorily to our patients and to ourselves. Dr. Good has made mention of the matter of skill necessary

in the removal of this pyorrheal deposit. I believe this bit of surgery requires the greatest skill for successful treatment. The most acute sense of touch is required, and absolute thoroughness in the removal of this deposit. If we have failed in our attempt to remove this deposit we have failed, both medicinally and surgically to effect a cure. You may ask: Has every one the ability to acquire this touch, to begin with? I believe I can safely say, "No." We might just as well ask: "Has every one the ability to become an accomplished piano player, with that delicacy of touch that brings out so much of the expression in the technique of piano work." I believe the same sense of feeling is as necessary to the treatment of this disease. I also believe that if we have not that sense of touch it can be acquired to a greater or lesser extent.

I believe that many practitioners fail in perseverance as well as thoroughness. It may possibly be that it will require time that you will feel you are not recompensed for, if your patients have not an appreciation of what you are accomplishing for them; but I assure you that if you are doing it gratuitously it is best to give it your time, for in so doing you have effected a cure, done a good deed, made a friend that will rise up and call you blessed.

Sometimes you will find the teeth in a loosened condition, which requires fixation. Before entering upon the removal of the deposit at all it is best—as it is in all surgical operations—to get as near absolute cleanliness as possible with dioxygen or pyrozone, glycothymoline or any of the antiseptics which you prefer. Then ligate the loosened teeth with a silken thread or band or perhaps cement the crowns together or, as I find most satisfactory, ligating them with wires, using wire and wrapping it from one to the other as you would make the figure eight. After the thorough removal of the deposit, then there is that flushing out of the pockets and washing of the mouth which the essayist has called attention to; and to do this I use warm water. I also use peroxide of hydrogen. I know there are those who have an aversion to the use of peroxide of hydrogen, but from the fact of its effervescence when it comes in contact with the red blood corpuscles, it carries with it those pyorrheal scales which we desire to get rid of. But listerine or any of the other antiseptics are perhaps equally as good, aside from that one quality. I think that the mistake that is frequently made in treatment is not keeping

close enough watch on the case, immediately following our treatment. This necessitates sittings in two, three or five days, as the case in your mind seems to require.

I would say a necessary qualification to the best results is placing the teeth at rest. To do this it may be necessary to disarticulate them. I agree heartily with the essayist upon the fact which he emphasized in the paper concerning the devitalization of the pulp. It is surprising to see how many of these cases will yield to the treatment after devitalization. I remember in one instance a patient came to me from the hands of a fellow practitioner who had been treating the case for pyorrhea alveolaris for about three months. Upon the first sitting I suspected from the conditions surrounding, and the flow of pus, that there was a putrescent pulp in the tooth, although the tooth was entirely free from caries. I ventured to open into the pulp and found the conditions as I had suspected, a putrescent pulp. It is needless to say that by treating this tooth, and filling the root canals the pyorrheal discharge was completely obliterated and a cure effected.

Sometimes it becomes necessary for us to amputate the roots of the teeth. In an upper molar, where we often find resorption on the lingual root, and still the buccal roots have a substantial hold to the alveolar process, I think amputation of the lingual root is good practice because we not only remove the irritant from the alveolar process and the gums, but we also give ourselves an opportunity of getting to the bifurcation of the other roots, from the lingual aspect, therefore, being more sure of a complete removal of the deposit.

Dr. Good does not state in his paper whether he believes this disease is constitutional or local. Personally I believe that it is a local disease. I believe it may be and is greatly aggravated by the systemic condition of the patient; but if it were a constitutional disease it would seem to me that we would have to have some specific systemic trouble, or some symptoms leading up to it, that we would find in every patient; such perhaps as consumption or rheumatism or gout or syphilis or many of the other diseases that flesh is heir to. We may find a patient that is troubled to some extent with one or the other of these while again we find patients who have never to their personal knowledge at least suffered any inconvenience or constitutional trouble. Therefore I give this as an argument why it is not

a constitutional disease. Again we find it in cases that have systemic troubles. I had one case not a great while ago that came to me with syphilitic lesions in the mouth and also pyorrhea. The pyorrhea has been cured. The syphilitic lesions still remain there. We find that by local treatment we are able to affect cures, which we could not do if it were a constitutional disease. Again we find that by extracting the teeth there is an immediate cure of the disease. If it were constitutional we would not get these results from it. Then again, some claim that it is of bacterial origin. If it were of bacterial origin it would not, it seems to me, be so slow in its transmission from one to another; and the soreness and resorption that comes from bacteria we would have after extraction. I think we may consider it wholly a local condition.

DR. J. J. WRIGHT, Milwaukee:

The only thing I find the essayist and I differ upon is the fact that he finds that it yields so readily to treatment, and I find that it is so hard for me to treat the tooth satisfactorily to myself and to my patient. I might say in that respect that this treatment does not constitute any part of a specialty in my practice; in fact, I am thoroughly convinced that I am very ordinary in the matter of treating pyorrhea alveolaris. My work in that line is confined almost entirely to treating the disease in its incipient stages. When I have patients come to my office with the congested gum, and with that characteristic swelling, with the brownish deposit under the free margin, I immediately take enough of my own time and that of my patient's to explain to them what it means if the matter is neglected. I make a special effort to remove the deposit and cure the gingivitis. In that way I try to head off the disease.

Dr. Good states that the work is entirely surgical. I can not quite agree with him on that point. I believe that if the work was entirely surgical that he would not proceed, as he says he does, after he is through with his surgical operation. He states that he fills the pocket with warm lactic acid, and after that he has the patient rub or massage the gums with powdered sulphur. Massaging today is regarded by the medical profession as almost a branch of therapeutics in itself. While the disease may be called local the simple removal of the deposits is not enough to eradicate it. We find that some authorities who have written upon this subject claim that that deposit

is secondary, and not primary. It is certain that the removal of the deposits upon the teeth is of primary importance; but the deposits may be caused from the congestive state of the gums where the capillaries are so congested that they have no longer the power of contraction. That congestion, if allowed to remain a long time, will cause the breaking down of tissue, and the breaking down of tissue will cause deposit on the teeth. Of course we know that these cases can not be healed unless this deposit is entirely removed. The removing of the deposit is the primary thing in the treatment of this disease, but I think the massaging of the gums, the re-establishing of circulation about the gingival part of the gums has as much to do in the beneficial treatment and in permanently establishing a healthy condition as anything else.

DR. GEORGE W. WHITEFIELD, Evanston:

I think one of the first things to do when our patients come to us is to instruct them in the thorough cleansing of the teeth. Most tooth brushes are hardly worth carrying home. Some of the widely advertised brushes are soft and ineffective after they have been used a few times. In the first place you must get a brush that is small enough so that the patient can thoroughly brush the teeth, and get around between the teeth. The lower molars lean to the lingual. Most all our patients brush just the surface, and never reach the gingival margin, which is the seat of the initial deposit. If this was a constitutional disease all the teeth would be affected, but by thorough cleansing we notice that some teeth are immune from it. It is simply because that tooth has received the proper attention, while the teeth that are affected do not. Primarily, then, instruct your patient. As the last speaker has said, take the time from the patient, and from your own time, to instruct him. It will pay to do so. Another thing: If you want to treat it successfully you must get in proper condition yourself. A man who has just made a rubber plate, whose fingers have been working in the plaster of paris, will not "have eyes in the tips of his fingers," and he can not feel the deposit and follow down the very sinuous pocket that extends to the very apex of the root. You must have your fingers in good condition, or you can not reach those difficult pockets. Here is a suggestion in regard to the treatment of those difficult pockets: Take some old broken instrument, with your Bunsen burner and a cake of laun-

dry soap. Put the instrument in the Bunsen burner, and when the point becomes cherry red plunge it in the soap, holding the soap within an inch of the Bunsen burner. In that way you will temper the point of your instrument. First, if you wish a hooked instrument, with a serrated file, you can form that hook. It is easy, as you pass the instrument down, to find the point of least resistance and bend your curves to fit that. You can get down to the end of the root, and even across the end of it.

It takes time to treat pyorrhea successfully, and it is well to instruct your patients, and make your charge in proportion. You must do the work thoroughly, or else do not attempt it. It is absolutely necessary that the patient should second your work. If they allow their teeth to get in a bad condition, no matter how well your work is done the case will not be cured. It will come back. No case is entirely cured by the dentist. It is more the patient's care than the dentist's skill. Do not attempt to treat too many teeth at one time. Treat a few at a time, and do it thoroughly.

DR. W. V.-B. AMES, Chicago:

I would like to call attention a little more emphatically to the advantage of giving the teeth absolute surgical rest, by permanent splints instead of anything that might still allow a slight movement, as will the ordinary ligating. I have seen many teeth lost where there was no further splint made, or no further apparatus or method of retention than the ligature with the metal or silk. I am satisfied the same teeth might have been retained a very long time, and made useful, if they had really been given surgical rest, which was what they needed to give them a chance for life. In making such splints in such cases, and watching the results, I became satisfied in time that what we call serumal calculus, as Dr. Wright said, is not so much a cause as an effect. Serumal calculus, according to my belief, is largely the result of that retrograde metamorphosis which comes about from the wrenching of the teeth in their sockets. There may be predisposition, which is aggravated by traumatic lesions. From the irritations set up by the breaking down of the tissues we get serumal calculus; and the remedy is a surgical splint which will make them immovable in their sockets.

DR. ROBERT GOOD, Chicago:

If any of you have questions I will answer them if I can.

DR. H. N. JACKSON, Milwaukee:

I would like to ask if you attach much importance to constitutional influences?

DR. GOOD:

I think the constitution has a bearing on pyorrhea, in the same manner that it would on an alveolar abscess. If you have a severe alveolar abscess, and it is properly treated, you will recover from it much quicker if you are in good health; and I think it is the same way with pyorrhea; a perfectly healthy patient will have a more rapid recovery than one that is not. I think pyorrhea is purely a local condition. All the cases I have seen cured have been cured by local treatment. Of course anything that will benefit the health will hasten the healing.

DR. H. N. JACKSON:

I would like to ask you what remedial effect sulphur has?

DR. GOOD:

They can use tooth powder if they want to. If you give them a tooth powder they will brush the teeth more thoroughly than if you told them to use warm water. I think the sulphur is rather stimulating to the gums, also.

DR. H. L. BANZHAF, Milwaukee:

Why do you use lactic acid instead of trichloroacetic acid?

DR. GOOD:

I have never used trichloroacetic acid. I get results from lactic acid. Dr. Younger I suppose has experimented with everything in the drug line, and he has settled down to lactic acid.

DR. BANZHAF:

What do you use—how strong?

DR. GOOD:

Chemically pure.

DR. WRIGHT:

What is the action on the tissue?

DR. GOOD:

It is not severe at all; but it is well to protect the mucous membrane or lips with oleostearate of zinc.

DR. WRIGHT:

What do you use it for?

DR. GOOD:

To stimulate the gum and to break up any old tissue that is left in the pocket. There is a pus membrane. We want to get rid of that, and create a new granulating surface.

DR. B. C. CAMPBELL:

Is it not a fact that it will produce some pain when injected?

DR. GOOD:

It will if you are not careful. For that reason I pass the syringe to the bottom of the pocket, and then withdraw it. I am very careful not to cause pressure, because if that enters the tissue at all you will have very severe pain. It is a very easy matter to cause pain. We should do everything we can to avoid that.

DR. J. J. WRIGHT:

How much cocaine is there in this solution that you use?

DR. GOOD:

About one-eighth per cent. An old classmate of mine sent me a few bottles of that anesthetic, and I get good results, and I have been using it.

DR. WRIGHT:

Something he uses locally for extraction?

DR. GOOD:

Yes; there is chloroform in it, I believe. It tells on the bottle all the ingredients in the solution.

DR. B. C. CAMPBELL:

Have you used acestoria?

DR. GOOD:

No; I understand that is very good.

DR. CAMPBELL:

By the use of acestoria you get the same results, and you may say it is practically safe.

DR. GOOD:

Use anything you want to that will deaden the gum.

DR. J. J. REED:

Will the acid corrode your syringe?

DR. GOOD:

Yes, I think it will, in time. I keep half a dozen syringes and needles going all the while; and the needles are not expensive. In time the lactic acid will eat the packing.

DR. REED:

Did you bring a sample of your point and syringe along?

DR. GOOD:

I have the whole outfit. Dr. McDowell has decided he wants the pleasure of being demonstrated on, and I will show you.

DR. REED:

How often do you apply the lactic acid?

DR. GOOD:

Once; and that is when I am satisfied I have all the deposit removed. Then I apply the lactic acid, and let it alone.

DR. H. N. JACKSON:

Do you ever find it necessary to resort to anything besides curetting? Ever have occasion to use the bur?

DR. GOOD:

No, I am satisfied the lactic acid will dissolve the necrosed bone—any rough edges of the alveolar process.

DR. McDOWELL:

How long, in your experience, does it take where there is a destruction of the process before that can, in a measure, be restored, and these splints removed?

DR. GOOD:

Well, I have one or two very extreme cases, molars, where there does not seem to be over an eighth of an inch. I kept the splints on three or four or five months. Possibly I need not have kept them on so long; but I told the patient they were doing no harm to leave them there. In fact I do not know that it would do any harm to leave bands like that on permanently; but usually in from three to four weeks the teeth will become firm.

DR. McDOWELL:

Do you not think there are many cases where it is impossible to reproduce any growth of the process, and cure, in the case of incisor teeth?

DR. GOOD:

Of course, where there is great absorption I would not expect to build that up. The idea is to have what is there do its service and hold the teeth firm; which it will do, no doubt about that. The idea is not to allow it to progress any farther and break down any more of the tissue. I imagine—in fact, I am satisfied—that in many

of the anterior teeth, where there is considerable recession of the gum, that that could be brought down, if you wished to give it the time. For instance, take my finger-nail as the tooth, and here is the gum; you go up in here (indicating) and make two or three incisions, and let those heal. The scar will naturally force that down. I believe you can force it down to where you want it; but I do not do that very often.

DR. AMES:

In my reference to giving the teeth surgical rest, and making these splints, I had in mind where it was out of the question to take your splints off. It is a permanent affair. I read a paper some time ago on "Bridge Work as a Factor in the Cure of Pyorrhea." The bridge makes your teeth serviceable for a long time.

DR. GOOD:

That is not objectionable at all. It is better than taking the teeth out, if you can get rid of all your pyorrhea in cases like that. Leave the splint right on, as Dr. Ames says.

DR. AMES:

I would like to ask you, or any gentleman in the room, whether the idea has ever been brought out of using as a remedy in these cases some slowly soluble zinc salt, like hydrate of zinc; using the zinc hydrate as an astringent, in the form of a tooth paste or tooth powder, with the idea of having a film of zinc hydrate left about the tooth, and these pockets under the free margin of the gum, to have a continued astringent effect? It is a subject that is being experimented with, and as far as I know it is a new idea.

DR. GOOD:

I should think it would be a good idea.

DR. H. N. JACKSON:

I find this Red Gum Fluid to be a very good astringent in these cases—Parke-Davis' Red Gum Fluid. It is markedly astringent.

DR. H. F. BANZHAF:

I suggest that Dr. Good be given time now to proceed with his demonstration.

THE PRESIDENT:

We will take a recess for that purpose.

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EDITORIAL.

A NEEDED IMPROVEMENT IN TOOTH BRUSHES.

Why is it that we can no longer buy a really good tooth brush? The cry comes from all over the land that the quality of tooth brushes has deteriorated in recent years until now it seems a difficult matter to get a brush which is effective, or which will remain effective for any length of time. In many instances the bristles are not well set in the handle, and the attempt to clean the teeth with a brush which is constantly shedding bristles in the mouth is not a very satisfactory procedure. Then again if the bristles remain in the handle they are frequently so flimsy that after once or twice using they are almost wholly ineffective. A brush to do proper work should be stiff and have some resiliency about it. Of course, if a brush is used so often that the bristles are not allowed to thoroughly dry, it can not be expected to do good work, but even in cases where four or five brushes are kept on hand so that each one is not used oftener than once in two days the same difficulty is encountered. It is becoming a serious question for the dentist to know what kind of a brush to recommend to his patients, because of this almost universal complaint. In fact, he is quite at a loss to know what brush to buy for himself. It may be that there exists some particular reason why manufacturers are finding it difficult to make a good brush, but the fact remains that brushes are not so good as they formerly were, and if there is any way of remedying the defect it should be done.

DENTAL COLLEGE TEACHING.

Each year as the college course opens it would seem as if there

was more and more a necessity for teachers to realize the full significance of their duty in attempting to instruct students in the science and art of dentistry. The future of the profession depends largely upon the character of the work done by our teachers, and while the advances made in this work in recent years are not unworthy the greatest minds in the profession, yet it will not do to be content with past or present achievements. There is no line of professional activity in which it is so essential that the effort be kept at the highest pitch as in college teaching. One year's work will not do as a guide to the next. It must be a constant ascendancy, and no man should attempt to teach unless he goes into every session's work with renewed convictions as to the high character of his duties, and with the determination to make each year's work better than the previous one.

THE EDITOR'S DESK.

MY SUMMER VACATION.

CHICAGO TO YELLOWSTONE PARK.

I was jaded and worn when I left Chicago. It was one of those times when the game does not seem worth the effort, when life is too complicated and the struggle too hard. I had become so overwrought with the pressure of a hard winter and spring, the close confinement to an office, and the myriad preparatory duties incident to leaving home, that the padding on my nerves had all worn off and left the sensitive filaments sticking out for everything to rub against. I could scarce be touched without flinching, or spoken to without jumping. In my inmost heart I dreaded the trip intensely. I didn't want to go where there were any people. What I wanted was to crawl off into some quiet nook and lie under a tree and listen to the birds and the breezes, and not hear a human voice. But we seldom know what is really best for us. This trip turned out to be the very thing I needed.

I had not been settled down in the luxurious compartment of the Pioneer Limited on the Chicago, Milwaukee & St. Paul Railway an hour before I began to "take notice." The appointments on this train are most excellent in every particular, from the dining car service to the clean and commodious berths. It all has an air of comfort, even of refinement, and it impressed me as being the acme of luxury in railway travel. I am at a loss to know why all railroads do not

use the compartment sleeper. There is an exclusiveness and a home-like reserve to them which does not obtain in the ordinary sleeping car, and there is convenience and comfort that can not be secured in any other kind of public travel. When I get to be a millionaire, I intend—as soon as I recover from the shock—to have a compartment car built to order for the personal use of my friends and myself, and I shall go to some of the St. Paul roads for suggestions as to how to build it. When I become a member of the Legislature—after I have lived down the disgrace—I shall introduce a bill com-



Pioneer Limited.

pling all railroads to place at least one compartment car on their through trains, and I will vouch for the patronage that these cars will draw if they are properly maintained.

Our party reached St. Paul after a night's ride, refreshed and rested; and speaking of our party reminds me that as some of them will enter quite prominently into the chronicles of the trip it may be well to describe them and give them a suitable label at the outset.

First there was the Mater who chaperoned the party, packed

the trunks, saw that everything was in the proper grip, kept the children in clean handkerchiefs, and waked us up in the middle of the night to see if we were all comfortable. We call her "Mommie" at home. The next was our little "Indian Girl"—so called, as I have before stated, ever since she escaped from the Iroquois Theater fire. The other member of the family, besides myself, was the ten-year-old. She is a plump, hundred-pound, roly poly bunch of life and fun, and a most excellent traveling companion. For purposes of identification on this trip she shall be named "The Collector," because of her propensity for picking up all sorts of souvenirs on the way and stuffing them confidently into my pockets for me to bring home for her. She seized on everything along the route from Indian arrow heads in Yellowstone Park to some wonderful moss in British Columbia. Nothing escaped her eye, and most of the trip I looked a good deal like a padded pack mule on his way up the Cariboo trail. But I sometimes proved a traitor to the trust. When my pockets got so full that no more stones, or trees, or flowers, or bugs, or dried leaves, or claws, or other commodities would go in I used to wait 'till she went to sleep at night and then go out around the hotel and surreptitiously contribute a pile of these rare curios to the ash heap. It was of course a low-down trick but the paucity of pocket space made it necessary, and besides I knew how disappointed she would be the next morning if, on finding some rare specimen—which she was certain to do—there was no longer any room in my pockets to receive it. One day when I was not immediately available she imploringly wheedled the Mater into allowing her to deposit a unique specimen of rock in her hand bag, but when some of the precious stuff crumbled off and got into the Mater's watch and stopped it there was an instantaneous embargo laid on any further deposits of the sort. So my pockets had to take it after that. But I am at a loss to know what we should have done on that trip without The Collector.

Aside from our immediate family there was Dr. W., who was a royal good fellow, but whom I nearly dubbed the dude on account of a remark made by his sister before we left Chicago. I had said that the doctor would better wear some of his old clothes going through Yellowstone. "Goodness gracious," said she, "he never has any old clothes." But I could have proved to the good sister that

he did wear old clothes before we got through with the park. Then there was another doctor, whom I called Dr. Izaak, after the immortal Walton of angling fame. We had not been on the train many minutes before he began to talk of rods, and lines, and flies, and casts—though he instantly resented the title of fisherman. He was an angler, if you please, and drew the nicest distinctions between an angler and a fisherman.

We had sufficient time in St. Paul for a good breakfast and a visit with some friends, and at 10:15 a. m. we took the "North Coast Limited" on the Northern Pacific for Livingston, where we were to change for the park. I had not expected the trip from St. Paul to Livingston to be of much interest, but there was not a dull moment in it. The North Coast Limited is an excellent train in every particular, with all the conveniences of a modern traveling palace. The first day's run took us through a country the chief feature of which was the profusion of wild flowers of all sorts. Children would flock to the rear of the observation car at every stop with bunches of flowers for sale, and as the train moved out the flowers that were not sold would be tossed over the railing to the passengers. Early next morning after the first night out we awoke to find ourselves in the midst of the famed Bad Lands. I had supposed that the Bad Lands were merely a dreary waste of level, barren country, where nothing would grow; but here I found immense masses of matter heaped up in the most grotesque shapes, and wholly indescribable in their variations of form and color. It looked to me much as if in the huge chemicalization and fusing employed in the manufacture of the earth the entire refuse of slag and other waste product had been dumped here in fantastic heaps of prodigious size. In fact, it looks like the dumping ground of all creation, and I could not escape the impression that nature had enough material left over to start another little world with, if she had wanted to.

As we came out of the Bad Lands we began to approach the sage brush and cattle country—more of the former than the latter. In fact, I saw on this trip so much sage brush that I was forced to make some computations. I figured that if it had all been cut and dumped in on Chicago it would bury the city from sight, even the Masonic Temple and Montgomery Ward's tower. The only thing

I can imagine as surviving such an avalanche might be the heads of some of our city politicians sticking out of the top of the heap and frantically yelling "Graft, graft!"

The character of the ranchers' buildings through the cattle country could not be considered palatial, nor were they numerous. After riding miles and miles we might see a small brown speck on the ground with a hole in it for the door. This was a rancher's residence, and I had a desire to sleep in one just once for the novelty. But I failed to get an opportunity. As we approached Livingston



Bad Lands.

the mountains began to increase in size and we got our first glimpse of snow-capped peaks. Such a phenomenon in July is quite impressive, and the impression was not altogether diminished by the fact that we subsequently saw so many of them.

It was the afternoon of the second day from St. Paul when we reached Livingston. Coming from St. Paul we had on the train with us a gentleman who had been through the park, and who gave us much useful information. In fact, he was one of those men who help to make travel exceedingly pleasant. To know him

a day on the train was to become his friend, and I shall never forget his kindness to us. How is it that some men spread light and happiness wherever they go, while others continually cast a shadow with their crankiness? It is a psychological question well worthy of study on board a train. In going to the park it is always of advantage to talk with some one who has been there, because there are many little details which can not well be included in the information contained in the company's folders.

(To be continued.)

DOMESTIC CORRESPONDENCE.

To the Editor of the DENTAL REVIEW:

Dear Sir: Some little time ago I promised to write you a letter describing my recent trip to Europe and my experience after leaving Chicago July 20th. During a short stay in New York, attending to professional duties, I took occasion to visit the good ship *Grosser Kurfurst*, of the North German Lloyd line, on which I had engaged my passage, and found that the ship was one of the highest type of ocean liners. While not a speedy ship, it was comfortable and the attentions of the officers and crew were all that could be wished for. On the morning of July 25th, as I was leaving my hotel to go to the ship, a messenger informed me that some one wished to speak to me by telephone. Going to the booth, I recognized the familiar voice of Dr. Robt. Good. He said, "Where are you?" I told him I was at the hotel. "When are you going to Europe?" I replied, "I am on my way to the ship now." "What ship are you sailing on?" I named the ship. Said he, "I am going to Europe, too." Immediately I replied, "Go with me." He answered, "I have no room." I informed him that I would assist him in getting a room and to meet me at the ship. One hour from that time the ship was to sail. I met him at the ship and we succeeded in getting a better room for him than I had engaged for myself two months before, so I had the pleasure of his company during that voyage. Besides Dr. Good, I was so fortunate as to have my fellow practitioners Drs. Appel of Chicago, Thiersch of Basel, Switzerland, a recent graduate of the Chicago College of Dental Surgery, now assistant to Professor Godon of Paris, and Dr. E. E. Cruzen of Baltimore. Dr. and Mrs. Cruzen made quite a lengthy stay abroad.

We left the Hoboken pier at 10 a. m. Before passing out of the Narrows the passengers were thrown into a state of excitement by the jumping overboard of a deported German citizen. For reasons that I did not learn this man was unable to land in New York and was forced to return to his native country. In obedience with a law governing the German liners, the ship lowered a lifeboat and then cruised in a circle about where the man sank, occupying one hour's time. The poor fellow swam like an expert more than one hundred feet from the ship, but whether from exhaustion or from a desire to terminate his life, he sank and was not seen afterward. A little story appeared in the New York papers the following morning, so we learned after our return, describing this incident and how the man was lost.

It has been my privilege to cross the ocean many times, but this trip was one of the most joyous in every respect that I have experienced. The most essential feature of a delightful ocean passage is the favorable condition of the sea. During the ten days' voyage the sea was absolutely calm, consequently all the passengers were on deck enjoying the balmy breezes and invigorating atmospheric conditions without the slightest thought of being disturbed. The fifth day out we met with an unusual experience. About mid-ocean we were sighted by a west-bound sailing vessel, which in the far distance changed her course with a view to crossing our bows. She came close to our side under a distress signal and our steamer slowed down to render her assistance. We found that the ship was lost and for three days she had been sailing unconscious of the latitude and longitude in which she was. Our officers gave her the desired information, and after dipping her colors to us in expression of her heartfelt gratitude, our engines increased their speed and the sailing ship passed along on its course. There were no other incidents on the way of note save the usual schools of porpoises and now and then a whale to attract attention until we approached Lands End, England. Here we see the coming of the gulls to meet us. It is a delightful experience in crossing the ocean, when a short distance from the coast of Ireland or England, to see these beautiful white-winged birds coming to welcome us to the old world. Their coming impresses us with the fact that old England is not far off. Twelve, fourteen or sixteen hours before the coast is visible, these beautiful birds gather around the ship and follow it until it comes to the pier. Approaching the English coast, the sailors, as

well as the passengers, are always delighted with the advent of these birds of the sea.

We entered Plymouth harbor just a little after dark, and a number of lead-colored warships were there at anchor. The beautiful elevation of the city, reaching up on the hills, as it does, brilliantly illuminated with electric lights, suggested the quiet and pleasant homes of the sturdy, prosperous English people. Leaving Plymouth and many of our fellow passengers, whose company we so much regretted to lose, we steamed across the channel to Cherbourg, the first seaport reached upon the French coast. Arriving at Cherbourg in the early morning we were met, for the first time, by unpleasant weather. Many of our fellow passengers here disembarked, mostly for Paris, though some for cities on the continent. The breaking*up of the ship's family was especially noticeable at the noon-day luncheon. In speaking of the noon-day luncheon, I might say to those who have not crossed on the German liners, that the luncheon is constant. The service on the ship provides luncheon every hour from 7:30 in the morning until 11 at night. Besides the required breakfast, noon-day luncheon and dinner, the ever genial steward was at his post, and his assistants were seen all hours of the day carrying coffee, bouillon, tea, crackers, sandwiches, fruit, cake and almost every other article of food that one would wish, about the decks and among the passengers. Whoever crosses on this excellent line will have no cause to complain in regard to the quantity and quality of the food supplied.

Writers whose language so graphically describe the works of nature have never been able to adequately portray the magnificence of an ocean sunset. Those of our passengers who have seen the coloring of the skies and of the clouds at the North Cape and who have witnessed the sunsets of the Baltic and North Sea, could not find words to express their admiration of the marvelously beautiful sunset which was visible to us on the evening of the 3rd of August off the coast of Holland. It was stated by the officers of the ship that such rare coloring and magnificence of cloud effect was seldom seen even on the North sea, whose sunsets inspire poets and defy the artist's skill. During the setting of the sun on the evening of August 4th, our ship reached Bramerhaven, where a train was waiting to take our people to Bramen. Much has been said in opposition to the American tariff. I have visited all the countries of Europe, and I have yet to cross a

frontier without finding a custom officer waiting to overhaul my baggage to see if I am bringing anything into the country subject to tariff without paying duty. A short ride by rail brought us to the very beautiful city of Bramen. In the company of Dr. Good and Mr. and Mrs. W. K. Cowen of Chicago, we traveled over the city and visited some of the places of interest, after which we dined at the celebrated Rathskeller. This cellar is noted as the scene of many historical events. It has been frequented by the early families of the Prussian dynasty through the centuries and the royalties of all Europe have been entertained here from time to time. We were escorted through these labyrinths by an attendant. We entered the emperor's room, and were shown the cups and glasses used by the ancient emperors and kings of Germany, dating back over a period of several hundred years. Here the victorious General Von Moltke was entertained by Emperor William I at the close of the Franco-Prussian war. A book might be written on the great events which have taken place within these walls during the past four hundred years, which would be of great interest to the student of history.

I was deeply impressed while there with the permanency and solidity of the style of architecture of the structures. In our own city, Chicago, with the history of its business center beginning after the fire of 1871, we find structures that cost many millions of dollars to erect, being replaced because of their imperfect construction and worthlessness, and when we compare these with the structures more than four hundred years old, and which are likely to last hundreds of years longer, we are forced to realize that we have much to learn from these reliable and efficient builders. I believe our architects and builders are equal to any in the world in point of ability and capacity to construct, and it has been admitted that we have good building material, but the enormous expenditure of money in our country for public buildings, which require a decade, and very often a quarter of a century to build, should be monuments to the memory of the men who designed and constructed them, instead of, in many instances, being in a very few years a mass of ruins, unfit and unsafe for habitation. Who will explain the cause of our many architectural failures?

Leaving Bramen on the morning of the 5th of August, we reached Hanover about 11:30 a. m. This was the city in which the International Dental Federation held its meeting on August 7th. We

found in session on the day of our arrival, as we had expected, the Central-Verein Deutscher Zahnartze. We immediately repaired to their rooms at the Hotel Tivoli, where they were in session. Entering, I found our illustrious fellow citizen, Dr. W. D. Miller, of Berlin, reading a paper on Oral Bacteria. Unusual as the custom is for a speaker to pause during his discourse, Dr. Miller extended to us a very cordial recognition, and then proceeded with his address. I was especially pleased with this body representative of German dentists. Their enthusiasm in their work was most commendable. The cordiality which seemed ever present among them was noticeable to a marked degree. Their social functions were of the most fraternal and enjoyable nature. Their manner of greeting any one, especially a stranger, may well be imitated in this and other countries. A stranger among them was greeted in time by all. A member of the association would approach him and ask his name and greet him in a manner so frank and with such assurance of good fellowship that the stranger felt quite at home among them. This day was spent in their meeting and clinical exhibits with pleasure and profit. The banquets were attended not only by the members, but by their wives and daughters also, who added so much to the pleasure of the occasion. Among those who have lived in America, and others who have visited America frequently, but whose homes are now in Europe, whom I met, I might mention Dr. W. D. Miller, president of the association; Dr. Bryan of Switzerland; Dr. Grevers of Amsterdam, Holland; Dr. Weiser and Dr. Zigmundy of Vienna; Dr. York, formerly of Chicago; Dr. Guerini of Naples; Dr. Aguilar of Madrid, and Dr. Platschack of Paris.

TRUMAN W. BROPHY.

(To be continued.)

PRACTICAL HINTS DEPARTMENT.

EDITED BY G. W. JOHNSON, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, THE DENTAL REVIEW, 55 State street, Chicago, Ill.]

Be Careful With Your Work.—A careless piece of work is the worst kind of a chicken and always comes home to roost.—*Mark G. McElhinney, Ottawa, Canada.*

Convenient Alcohol Lamp For Laboratory.—Prepare the nozzle of an oil can of suitable size by cutting it off at the diameter of the wick required. Insert the wick, fill oil can with alcohol, adjust the nozzle with wick inserted and the apparatus is ready for use. When not in use cover with a small glass vial.—*G. E. Kuhl, Saline, Mich.*

Preparing Sensitive Cavities.—The first application of the bur can be made absolutely painless in the most highly sensitive cavity by simply taking ethyl chloride on the bur point and bringing it quickly into contact with the tooth. It can be done in the hundredth part of a second and there are very few teeth that could not be operated upon in two seconds with ethyl chloride.—*J. W. Gale, Cologne, Germany.*

To Remove Amalgam Fillings.—Apply the rubber dam. This is imperative. Drill two or three small pits into the filling and disk or slightly roughen the surface. With a clean piece of silver, the surface of which is amalgamated, carry an excess of mercury to the filling and smear thoroughly into the pits and over the surface of the filling. After a few minutes bur out the filling, starting at one of the pits.—*Abraham M. Waas, Philadelphia, Pa.*

Pyorrhea.—While not combating the heredity theory entirely, I do insist that local prophylaxis produces better results than systemic medication. Therefore, while heredity may be a predisposing factor to the disease, proper care and cleanliness will tend to prevent

it. This much should be taught in all families where the disease is present, and at the same time parents should be fully informed of the character of the disease and its communicability.—*L. L. Davis, Chicago.*

Butyl-Chloral Hydrate.—This drug is prepared by passing chlorin gas into acetic aldehyde. It comes in commerce in thin white scales of silky luster, peculiar odor, bitter taste and neutral reaction. It is used as a substitute for chloral hydrate in cases of heart disease, and where very large doses are required for hypnotic effect. It has practically no narcotic action, which makes it a desirable drug for administration where hypnotic effect only is desired. Its dominant action is upon the fifth nerve, this fact making it of vast importance to the dental practitioner.—*T. L. Grisamore, Chicago.*

Bridge-Work Where Supports Are Weak.—Where the teeth are long the leverage will be very exacting. The best results may be obtained by not making the occlusion perfect, making more of a flat surface well roughened, on the principle of the mill-stone, so that the opposing teeth could glide laterally without any great amount of leverage. The grinding power is probably not quite as efficient, but the tendency to loosen the teeth or supports is done away with. Do not try to do too much with such cases in the way of perfect antagonism, but give the patient a fair grinding surface and the work will last much longer than where there is perfect occlusion.—*W. Mitchell, London, England.*

Pain in Dental Operations.—I have always felt that the dentist makes a very serious error when he wilfully forces his patient into such a degree of suffering that he loses confidence in dental operations. Many patients would rather let their teeth go than undergo severe pain; or they will have them extracted and resort to artificial teeth. Many people allow their teeth to go unattended because they dread the pain incident to severe dental operations. Many times, with very nervous persons and those who suffer greatly even from small causes, we must resort to hypnotics and anodynes if we perform our operations thoroughly. I find that many of these agents are helpful in this regard.—*Elgin MaWhinney, Chicago.*

Operative Procedure for Excavating Sensitive Cavities.—

There is a distinct difference in the sensitiveness, dependent on the manner in which the dentine is cut. Success in many cases may be achieved by cutting the dentine in the following manner: Instead of using the usual bur and cutting transversely, cut vertically to the axis of the dentine and with a drill with a flat point cut a series of small holes and the operation can then be continued with half the pain that would be otherwise occasioned. What generally troubles most people is to get an anchorage, but by drilling a series of small holes the dentine may be cut with very little pain compared to that caused by using a drill in the ordinary manner.—*H. L. Schaffner, Florence, Italy.*

The Young Practitioner.—The young practitioner at the outset should determine to exert his best energy and leave no stone unturned to acquaint himself with every detail pertaining to his chosen profession. When he has carefully selected his location, his success is assured if he will, first, be careful in selecting his associates, and show that he is worthy of confidence. Second, if he will select a good location for his office and expend as much money as practicable in fitting it up with the necessary instruments, etc. Third, if he will keep his clothes and person neat and attractive and his office and instruments immaculately clean. Fourth, if he will have his office hours and be found ready and agreeable at any time within those hours.—*J. N. C. Moffat, Houston, Miss.*

Treatment for Pyorrhea.—If the teeth are becoming loose then an effort should be made to make them firm; they should be held in place by some means long enough for the tissues to get well. Remove the deposit and the tissues will get well, unless the patient is run down physically, or unless we have to contend with some general systemic disturbance or low state of vitality, resulting from syphilis, from phosphorus, lead or malarial poisoning. There may be a low state of health from inactivity of the stomach, bowels and liver. All these are factors which should be considered. Systemic treatment will put the patient in as good condition as possible, and then we may treat the local condition in almost all cases with a reasonable assurance of affecting a cure.—*Truman W. Brophy, Chicago.*

BOOK REVIEWS.

A PRACTICAL TREATISE ON ARTIFICIAL CROWN-, BRIDGE-, AND PORCELAIN-WORK.—By George Evans. Seventh edition, revised and enlarged, with 754 illustrations; 448 pages. Published by the S. S. White Dental Mfg. Co., Philadelphia, 1905.

It is hardly necessary to more than call the attention of the profession to the new edition of this standard work. Evans' crown and bridge work has become so well known that it is sufficient to state that the new volume has been brought to date with the same thoroughness that has characterized the previous issues. The literature upon the technical processes in dentistry is extending very rapidly, and the need of such a work as this is exemplified by the fact that it has already run into seven editions. The work is in every way creditable.

A TEXT-BOOK OF CHEMISTRY, for the use of Students and Practitioners of Medicine, Dentistry and Pharmacy. By William Russell Jones, M. D., Ph. G. Professor of Medical Chemistry and Toxicology, and Lecturer on Medical Diagnosis in the University College of Medicine; visiting Physician to the Virginia Hospital, Richmond, Va. Illustrated. 462 pages. Price, \$2.50, net. Published by P. Blakiston's Son & Co., Philadelphia.

This work is divided into six parts, viz.: Physics, Chemical Philosophy, Inorganic Chemistry, Organic Chemistry, Methods of Quantitative Analysis, and Physiological Chemistry. It will thus be seen that the range of subjects is great and, though the volume is large, there is apparently no padding in it. The growing importance of a close study of physiological chemistry is emphasized in the fact that the author has devoted seventy pages to this subject. It is a volume worthy of careful study by students, and a good reference work for practitioners.

MEMORANDA.

WABASH RIVER SECTION OF ILLINOIS STATE DENTAL SOCIETY.

The Wabash River Section of Illinois State Dental Society will hold its next meeting in Newton, October 17th and 18th.

J. M. STEPHENS, *Secretary*.

SPECIALISTS IN DENTISTRY.

The profession seems to be drifting more and more into specialties. The most recent addition to Chicago specialists is Dr. F. K. Ream, recently of St. Louis, who has associated himself with Dr. L. W. Nevius in the specialty of extracting.

NEW JERSEY STATE DENTAL SOCIETY.

J. E. Duffield, D. D. S., president, Fifth and Benson streets, Camden, N. J.; M. R. Brinkman, D. D. S., vice-president, Hackensack, N. J.; Charles A. Meeker, D. D. S., secretary, 29 Fulton street, Newark, N. J.; Herbert S. Sutphen, D. D. S., assistant secretary, 24 Kinney street, east, Newark, N. J.; Dr. Henry A. Hull, treasurer, New Brunswick, N. J.

INDIAN TERRITORY DENTAL ASSOCIATION.

The following is a list of officers for 1905-1906: President, A. E. Bonnell, Muskogee; vice-president, S. A. Long, South McAlester; secretary, F. A. Stickel Jr., Muskogee; treasurer, A. L. Walters, Checotah. Executive committee is made up of the officers excepting the treasurer, and the addition of two who were elected, Dr. Wright, of South McAlester, and Dr. Mills, of Poteau.

THE JENKINS SOCIETY.

A society under this name has been formed in the Eastern States with a charter membership of twenty-five. The objects of this society are to disseminate new information in regard to the use of porcelain in dentistry and to encourage its proper use by clinics and demonstrations. The society is to be international in character and any dentist in good standing, interested in porcelain work, is eligible to membership. The annual dues are \$1.00. The dues are to defray the expenses of publication and distribution of the new literature on porcelain. All applications for membership should be sent to the undersigned.

B. C. GUILLE, D. D. S., *Secretary and Treasurer*,
Penn Yan, N. Y.

DENTISTRY IN EARLY DAYS.

The following is an extract from an old Sydney newspaper, dated June 25, 1855:

"All accounts due to Jourdan Brothers, surgeon dentists, of 25 Hunter street, are requested to be sent in by the end of the month. In future no credit will be given. So that our patients may come provided, we publish the following list of our charges: Scurvy in the gums (including lotion), from £3 to £10; disease of the enamel, £2 to £5; chronic inflammation of the gums, £1 to £5; morbid growth of the gums, £1 to £5; mercurial inflammation of the gums, £5 to £20; ulceration of the gums of children, £1 to £3; filling decayed teeth, £1 1s each; artificial teeth on Jourdan's new system, £3 3s each."

RECENT PATENTS OF INTEREST TO DENTISTS.

- 797684—Dental instrument, William E. Harper, Chicago, Ill.
 799495—Porcelain tooth-facing, Leon L. Poston, Council Bluffs, Iowa.
 799972—Dental chair, Frank E. Case, Canton, Ohio.
 799724—Dental tool, Adam W. Feltmann, Chicago, Ill.
 800093—Dental device, William S. Filley, Montpelier, Ohio.
 799937—Dental crown or plate swaging device, Joseph A. Reid, San Francisco, Cal.
 800033—Stand for tooth and nail brushes, tobacco pipes, etc., Wilhelm Ullrich, Offenbach-on-the-Main, Germany.
 799811—Obtunding apparatus, Crittenden Van Wyck, San Francisco, Cal.
 Copies of above patents may be obtained for ten cents each by addressing John A. Saul, solicitor of patents, Fendall building, Washington, D. C.

ILLINOIS STATE BOARD OF DENTAL EXAMINERS.

The regular annual meeting of the Illinois State Board of Dental Examiners for the examination of applicants for a license to practice dentistry in the state of Illinois, will be held in Chicago, commencing Tuesday, November 14 to 19 inclusive.

Persons in possession of the following requirements will be eligible to take the examination: First, all persons who have been engaged in the actual, legal and lawful practice of dentistry or dental surgery in some other state or country for five consecutive years just prior to application; second, or is a graduate of and has a diploma from the faculty of a reputable dental college, school or dental department of a reputable university; third, or is a graduate of and has a diploma from the faculty of a reputable medical college or medical department of a reputable university, and possesses the necessary qualifications prescribed by the board."

Candidates will be furnished with proper blanks and such other information as is necessary upon application to the secretary. All applications must be filed with the secretary five days prior to the date of examination.

Address all communications to J. G. REID, D. D. S., *Secretary*.
 1204 Trude Bldg, Chicago, Ill.

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

The twenty-second annual meeting of the National Association of Dental Faculties held at Buffalo, N. Y., July 27-28, 1905, resulted in the election of the following officers and committees:

President, J. H. Kennerly, 2645 Locust street, St. Louis, Mo.; vice-president, J. I. Hart, New York; secretary, George Edwin Hunt, 131 East Ohio street, Indianapolis; treasurer, H. R. Jewett, Atlanta, Ga. Executive Committee: D. J. McMillan, Kansas City; L. P. Bethel, Columbus, Ohio; J. B. Wilmot, Toronto; R. M. Sanger, East Orange, N. J.; H. B. Tieston, Louisville. Ad Interim Committee: S. H. Guilford, Philadelphia; M. C. Marshall, St. Louis; J. P. Gray, Nashville. Foreign Relations Committee: G. V. Black, Chicago; W. F. Litch, Philadelphia; D. R. Stubblefield, Nashville; William Carr, New York; J. D. Patterson, Kansas City.

Forty-three of the fifty colleges holding membership were represented by delegates and a most harmonious meeting was held. United States Consul J. H. Worman, Munich, Germany, was present at one session and told what was being done to rehabilitate the American degree in that country. Announcement was also made that the United States Government had recognized the National Association of Dental Faculties in its act regulating the practice of dentistry in the Philippine Islands.

GEORGE E. HUNT,
Secretary.

THE NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

President, H. W. Campbell, D. D. S., Suffolk, Va.; Vice-presidents, from the West, F. O. Hetrick, D. D. S., Ottawa, Kas.; from the South, F. A. Shotwell, D. D. S., Rogersville, Tenn.; from the East, George E. Mitchell, D. D. S., Haverhill, Mass.; secretary and treasurer, Charles A. Meeker, D. D. S., Newark, N. J. Committee on Colleges: J. G. Reid, D. D. S., chairman, 1204 Trude building, Chicago, Ill., George E. Mitchell, D. D. S., Haverhill, Mass., J. J. Wright, D. D. S., Milwaukee, Wis. Committee on Conference: J. F. Dowsley, D. D. S., chairman, Boston, Mass., F. O. Hetrick, D. D. S., Ottawa, Kas., R. H. Walker, D. D. S., Norfolk, Va. Membership Committee: M. F. Finley, D. D. S., chairman, Washington, D. C., Thomas Cole, D. D. S., Newman, Ga., C. R. Taylor, D. D. S., Streator, Ill. State Advisory Committee: Henry Barnes, M. D., Cleveland, Ohio, George E. Mitchell, D. D. S., Haverhill, Mass., E. P. Dameron, D. D. S., St. Louis, Mo., C. H. Oakman, D. D. S., Detroit, Mich., W. G. Mason, D. D. S., Tampa, Fla. Committee for Promoting Relations with Foreign Examiners: T. J. Barrett, D. D. S., chairman, Worcester, Mass., F. A. Shotwell, D. D. S., Rogersville, Tenn., F. C. James, D. D. S., Winona, Minn., C. Stanley Smith, D. D. S., Cincinnati, Ohio. Committee on Resolutions: H. C. Brown, D. D. S., Columbus, Ohio, C. S. Stockton, D. D. S., Newark, N. J., F. F. Drew, D. D. S., Baltimore, Md. Committee on Contracts: Charles A. Meeker, D. D. S., Newark, N. J. Committee on Tabulation of Examiners' Reports of Examinations: Alphonso Irwin, D. D. S., Camden, N. J.

FIRST ANNUAL CLINIC OF THE FRATERNAL DENTAL SOCIETY OF ST. LOUIS, NOVEMBER 20-21, AT THE BARNES DENTAL COLLEGE.

Special features of the meeting will be a series of lectures on "Cavity Preparation," "Methods and Principles of Packing Gold," "Methods and Principles of Finishing Fillings," by Dr. E. K. Wedelstaedt, of St. Paul.

The following well known members of the Black and Wedelstaedt Clubs will be present and clinically demonstrate "extension for prevention" to its fullest extent. Drs. A. C. Searl, Owatonna, Minn.; J. F. Wallace, Canton, Mo.; C. W. Booth, Cedar Rapids, Iowa; J. J. Booth, Marion, Iowa; William Finn, Cedar Rapids, Iowa; J. B. Pherrin, Central City, Iowa; Ed. S. Brown, Edina, Mo.; W. T. Rutledge, Monroe City, Mo.; S. E. Wallace, La Belle, Mo.

Porcelain work will be fully demonstrated by Drs. F. E. Roach, Chicago, W. L. Ellerbeck, Salt Lake City, George T. Banzett, Chicago, W. H. Cudworth, Milwaukee, and Craig W. Work, Ottumwa, Iowa.

Other clinics on various subjects will be given by Drs. W. L. Reed, Mexico, Mo.; J. B. Howell, Paducah, Ky.; C. L. Rose, Fargo, N. D.; F. B. Lawrence, Eldorado, Kas.; George D. Sitherwood, Bloomington, Ill.; A. Gaiser, Davenport, Iowa; Fred Westerfield, St. Charles, Mo.; Otto J. Fruth, St. Louis, and Richard Summa, St. Louis, and others.

Exhibits.—The following dealers have signified their intention to be present and display. S. S. White Dental Manufacturing Company, Dr. Jenkins Porcelains, Kiewe & Co., A. C. Clark & Co., St. Louis Dental Manufacturing Company, John Nolde Dental Manufacturing Company, Hisey Dental Manufacturing Company, Denthol Chemical Company, Lambert Pharmacal Company, Lee S. Smith & Sons, Century Dental Laboratory Company, W. M. Berry Dental Laboratory Company, R. C. Brophy & Co., Keeton Williams Gold Company, Horlick's Food Company, Kress & Owens, Oakland Chemical Company, McKesson & Robbins, and others.

Railroad Rates.—The Western Passenger Association and Southwestern Excursion Bureau have granted a rate on one and one-third fare, plus 25 cents, validation fee, *certificate plan* for this meeting for the states of Mis-

souri, Iowa, Minnesota, Kansas, Nebraska and Illinois, on and west of the line of the Chicago & East Illinois Railroad.

Hotel Headquarters.—At Hotel Jefferson, Twelfth and Locust streets. Rooms without bath, \$1.50 up; with bath, \$2.50 and up. For two persons in one room, without bath, \$1.00 each and up; for two persons in one room, with bath, \$1.50 each and up.

Exhibit space may be obtained by application to the secretary. If you have a clinic to give send your name at once to the supervisor of clinics. A cordial invitation is extended to the profession to be present and assist in making this meeting limited in scope but limitless in importance, the best ever held in this section. D. O. M. LeCron, supervisor of clinics, Missouri Trust building. S. H. Voyles, secretary, 306 Humbolt building. Burton Lee Thorpe, president.

THE NEW BABY.

What a miracle it is,
 What a precious mite;
 What a world of change it brings,
 Making day of night.

Center of the household group,
 Every one must bow
 To this tiny prince of ours,
 Herald of the now.

Yesterday we moped about,
 Settled and sedate,
 Now the house is all astir,
 Morning, noon and late.

Baby things besiege the eye,
 Scattered everywhere;
 Bottles, bibs and safety pins,
 Camphor in the air.

Saffron, pumpkin seeds and oil,
 Hiccoughs, peppermint,
 Antiseptic powders, too,
 Flannel, linen, lint.

And the baby holds the boards,
 Takes a major part,
 Creeping like a tender plant
 Into every heart.

What a pokey world this was
 Ere the baby came!
 Now we're busy all the day
 Picking out a name.

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PORCELAIN BRIDGEWORK.*

BY HART J. GOSLEE, D. D. S., CHICAGO, ILL.

The subject of porcelain work has now become such an attractive feature of dental practice, dental gatherings and dental literature as to interest not only those practitioners who are progressive and who strive to accomplish the highest possible type of artistic achievement, but also those who were formerly most skeptical, and, indeed, even a large representation among the laity.

And yet, popular as the subject is now acknowledged to be, and unlimited as may be its possibilities, in acceding to the solicitation of your energetic committee some slight apprehension is felt for the reason that, on the surface at least, it would seem somewhat difficult to add materially to that which has already been said and done perhaps over and over.

And yet, again, it must be acknowledged that the particular phase of the subject which has been assigned to me, and which is encompassed in the title of this paper, is one which has received the least previous consideration from even the most enthusiastic advocates and the one which at the present time is the cause of more discouragement and skepticism than any other.

For this reason, and in view of the acknowledged progress and the proportion of successful achievements made in all other phases of this class of work, it would, therefore, seem warrantable to lend encouragement to an effort having for its aim a consideration of the practicability of this one particular phase, and therein lies the pretext for this effort.

*Read before the Illinois State Dental Society, Moline, May, 1905.

By way of prefacing the subject proper, and as a means of elucidating the possible cause of failures and discouragement, let me beg your indulgence in repeating some thoughts of my own which have been elsewhere expressed, and yet which are so pertinent to the issue as to warrant repetition.

The application of porcelain encompasses so great a scope of usefulness and practicability as to insure its continued employment, and this scope will increase in proportion as the desire for the accomplishment of higher artistic attainments is cultivated and developed, and in proportion as we may by this means awaken to a recognition of its possibilities and limitations.

While the logic of this statement is now not to be disputed, yet in discussing the subject of porcelain a prominent writer has said that "the profession was being deluged with a tidal wave of enthusiasm, from the undertow of which it would be a long time in recovering," and while, perhaps, many soon fell to his same way of thinking, still all must now agree that the death-knell of porcelain will probably never be sounded.

Such a statement is even as radical as the more recent one that "the day of the gold-plugger was rapidly passing," and yet when we analyze the former assertion we find it to be both false and true. On the one hand it is literally true only in so far as overenthusiasm may induce an *injudicious application*, while on the other hand it is false and misleading for the reason that there is a certain proportion, or class, of cases where the application may be confined within the range of practicability.

In this connection I desire to quote from a paper read before the Ohio State Dental Society in December, 1903, and published in the *Dental Summary*, June, 1904:

"Overenthusiasm in any special line of thought, or in any particular field of labor, whether it be of a scientific or practical nature, may—and, indeed, often does—react to the injury of the theory inculcated, or of the product resulting, and yet it quite as often serves a useful purpose by the stimulation and encouragement which it engenders.

"The wheels of progress in whatever line have doubtless gained more momentum from the activity and energy of the enthusiast than from the philosophy of the conservatist. If this may be truthful—

and a liberal review of the history of the progress of the world would seem to so indicate—then it must in turn be also true that we must never overlook, or fail to pay tribute to, even that class of enthusiasts whom some are disposed to designate as ‘cranks,’ because those who by nature may be more conservatively inclined are more or less dependent upon the former class for the inspiration which stimulates and encourages the development of their more practical minds.

“This theorem applies to the general application of porcelain work to dentistry in so far as that it warrants us in conceding that even the most radical enthusiast commands and deserves our respect and consideration for his vigorous efforts in encouraging the adoption of methods of procedure which enable us to better serve our sphere of usefulness in the preservation or restoration of the teeth of the human family. That this class of men has done much to increase our artistic attainments, and incidentally has aided very materially in elevating the profession to a position where it commands the respect of the people, and where any insinuation that it is the mere vocation of the artisan or craftsman, can with justice and propriety be refuted, there can be no doubt.

“And yet, while we must thus acknowledge a debt of gratitude to those whose overzealous enthusiasm has led them to become designated as ‘cranks,’ but whom I prefer to call *radical enthusiasts*, yet, after all, you will agree with me that it is to the efforts of the *conservative* enthusiast that is due the real development and progress of porcelain work, in all or any of its phases, to its present degree of perfection; and to whose efforts we must always look for such logical confirmation as will insure its stability and permanency as an art; because, where the application is necessarily confined to such a diversified range of conditions and requirements, development and improvement, such as may insure success, must always depend upon a conservative and judicious comprehension of its true province and practical limitations.”

The application of porcelain to the construction of dental bridges was among the early achievements of modern ceramics, and was advocated and practiced by Drs. Land, Parmley Brown and others, to a greater or less extent, for a number of years.

While the practice has never been entirely abandoned, still it is true that from these, and from our own most primitive efforts, so

large a proportion of failures resulted as to occasion much doubt and skepticism concerning the practicability of this method of construction.

None doubted the cosmetic and hygienic possibilities for a moment, but since these did not constitute the sum total of the requirements of dental bridges, and since the friability of porcelain has also never been doubted, the results were fraught with discouragement.

Lest we forget, however, let us consider the cause of these failures. As we better know and hence more fully appreciate the actual requirements *now*, and as we realize how very crude these primitive efforts were, need we wonder at failures resulting? And, indeed, need we marvel at their being recorded so often, even at the present time, when our textbooks of today are still advocating methods which those of experience know to be inadequate and impracticable?

Since we profit by our failures, therefore have we learned to appreciate the requirements, and only as these may be observed will the application of porcelain to the construction of bridgework be successful.

In considering those features which constitute the requirements the first is manifestly that of judicious application, and this means that the conditions must be favorable or the employment of porcelain is contraindicated.

Because of its peculiar physical characteristics, and of the fact that strength can only be obtained from bulk, conditions which are favorable to its application demand, first, ample space to admit of the employment of a sufficient bulk to possess necessary inherent strength; second, an amount of absorption of the contiguous tissues which will make opportunity for this, and practically preclude subsequent absorption; and, third, an occlusal relation which will be favorable.

Thus the indications for the application of porcelain bridge-work are by no means universal, and constitute in the composite, in plain words, plenty of room for porcelain, and when this does not obtain such a type of construction is always contraindicated.

As the degree of absorption usually increases in proportion to the number of natural teeth absent from the arch, and as the application of "fixed" bridges to very extensive cases is rarely indicated, it

is therefore evident that porcelain is more universally applicable to removable appliances where a wide saddle may be used to protect and support the porcelain from stress, than to those designed to be permanently attached to the supporting teeth, and indeed when its application is confined to this class of work the highest type of cosmetic, hygienic and serviceable prosthesis is obtained.

Under similar conditions, however, these same advantages obtain from the application of "fixed" bridges, but it is well to emphasize in this connection that every opportunity for observing the detail of all the requirements must present and that the most successful achievements will usually result from the smaller and less expensive pieces of this type of construction.

In either of these general types of construction, however, there is another feature of the requirements which can not be too strongly emphasized, and which is so imperative as to demand close and skilful observation.

This feature embraces the fundamental requirements of construction, and while the general principles are applicable also to "removable" pieces, they are more especially so to "fixed" structures, and therefore will be elucidated from this viewpoint.

More failures in porcelain bridgework can undoubtedly be attributed to an inadequate knowledge or observation of these requirements than can ever be laid to the fault of the porcelain itself. Indeed almost any of the porcelain compounds on the market possess the necessary strength and may be successfully employed, providing the proper attention is given to the construction of the piece before the porcelain is applied to it.

A knowledge of the characteristics of porcelain, and particularly of its friability, makes at least one feature of its successful application at all times, and in all places essential, and this feature is that it must be amply protected and fortified against the influences of stress.

Therefore in its application, particularly to "fixed" bridgework where it is deprived of the cushion-like effect of the soft tissues beneath it; and since its inherent strength is entirely dependent upon its bulk, and further, since there is no physical union between it and the structure supporting it, the platinum substructure must of necessity be so adapted and adjusted as to afford a strong, rigid, unyielding base, which will mechanically sustain the porcelain; which will protect

it from stress in all directions, and which will not materially weaken it in any manner.

Such requirements can not be obtained by the assemblage of the parts of the platinum base with pure gold as a solder, as was the former practice, for the reason that its absorption by the platinum at its melting point, or its volatilization at a higher temperature, or both, precludes the making of strong, reinforced joints, and makes possible a change of form from the shrinkage of the porcelain; and these inevitable results have in no small measure accounted for many failures.

The advent of platinum solder for assembling the various parts in a manner which will afford these requirements, which will admit of ample reinforcement of all weak places and preclude subsequent change in form, or in the relation of the parts during the fusing of the porcelain, has, however, made this possible, and hence its employment is absolutely essential to success.

Aside from the reliable assemblage of the various parts, and this should also include the attachment of the facings, inadequate provision for supporting the porcelain has also been the cause of many failures.

The absence of such mechanical provisions and failure to appreciate and observe this phase of the requirements of construction, may possibly be attributed to an ultra-conservative disposition on the part of many to avoid the employment of a "saddle."

In this connection, and particularly when the bridge involves the posterior teeth, some form of saddle be it either concave or convex, is the only means by which the mass of porcelain which is to be subjected to masticatory stress may be properly and adequately supported and protected, and while, for hygienic reasons, it should never be any wider than absolutely necessary for this purpose, its employment is nevertheless demanded.

While the hygienic or unhygienic properties of this type of construction has long been a lively topic for discussion, the one or the other condition resulting will depend entirely upon the degree of accuracy obtained in its adaptation to the tissue upon which it rests.

When such tissue is well absorbed, when the adaptation to it is close—which may be obtained only by swaging—and when no sharp or irregular edges to induce irritation or hypertrophy, are present,

experience contradicts any claim of its being decidedly unhygienic, and indeed, under these conditions, the result obtained is on the contrary more hygienic than the usual formation of the lingual surface of posterior dummies on gold bridges, and when such opportunities are not present the "saddle," and porcelain bridges as well, are contraindicated.

As a further means of supporting the porcelain in posterior bridges the addition of a shoulder attached to the lingual surface of the saddle is eminently advantageous, for by such means, if the occlusion is at all favorable, fracturing of the porcelain from any reasonable amount of stress is thereby made practically impossible.

And further, since the integrity of the porcelain must not be unnecessarily diminished, increased strength is always insured by bending the pins of the facings down close to them, and by so adjusting the uniting iridio-platinum wire, which should be round and of at least 14 gauge, as to have it down close to the saddle and to the facings, thus precluding the weakening of the porcelain by dividing it through the center with metal.

If the requirements of the metal construction for this class of work are thus properly observed, it is evident that but little strength in the porcelain itself will be required, and hence, as previously stated, most any of the various compounds will answer the purpose if they are properly manipulated.

Owing to the excessive shrinkage of the so-called "low" fusing bodies, however, the best results will obtain from the use of those designated as "high" fusing, for the reason that a minimum degree of shrinkage combined with a maximum degree of stability of form and color will facilitate and expedite the procedure.

This advantage may be further increased by the employment of *one grade* of "body" throughout the construction of the work in preference to using foundation first and then finishing with enamel bodies, for the reason that when one grade is used exclusively, if the work is first built up to the desired form and contour, two fusings are usually all that will be required, while in the use of two grades, three, four and sometimes five fusings may be necessary to produce the same result.

The mounting of porcelain bridges should always be made with guttapercha in preference to cement because of three very important

features. First, when so mounted they may be removed at any time without difficulty or injury; second, the impact from the stress of mastication is relieved by the cushion-like effect imparted by the presence of this material; and third, it is almost impossible to use cement when a saddle is employed without forcing the surplus underneath it, and when this crystallizes irritation is the invariable result. It may also be further stated that the ordinary baseplate gutta-percha, while somewhat more difficult to manipulate, seems to possess greater integrity, and to thus insure a greater degree of permanency than the various so-called gutta-percha cements.

In conclusion, while the indiscriminate construction of extensive bridges in porcelain is not to be recommended, yet the artistic results possible where the indications are favorable, where the requirements are carefully observed and where the detail is skilfully executed, make for it a permanent place in the construction and application of both "fixed" and "removable" bridges.

NOMENCLATURE.

BY DR. E. K. WEDELSTAEDT, ST. PAUL, MINN.

Some things in this world are not only astonishing, but they are amusing as well, provided a person can bring himself to look at them with a certain degree of intelligence. For example, some time ago I was taken to task for using the term "proximal cavity." The writer informed me that the term conveyed nothing, that there was no such thing as a "proximal cavity," that the correct expression was "a cavity in the proximal surface."

His statement was somewhat surprising, but upon discussing the subject with some of our educational authorities, I found that the writer had good grounds for his contention. And now comes the amusing part. A couple of months after receiving his letter, my astonishment may be imagined on finding the writer's name on the program of a dental society, where he was supposed to read an essay on "Occlusal Cavities."

Now the man knew better than this, but so strongly do we be-

come attached to some certain way of expressing ourselves that we stick to what becomes natural in preference to using that which is correct. And I, in my haste, am as guilty of doing this as anybody else.

And what is correct? If a tooth has five surfaces, i. e., mesial, distal, lingual, occlusal or incisal, buccal or labial, as the case may be, are the cavities which take place in any of these surfaces to be known as a cavity in such and such a surface, or are they to be called a mesial cavity, a distal cavity, etc.? If there is a cavity in the buccal surface of a lower right first molar,, shall we say a buccal cavity or shall it be a cavity in the buccal surface?

This is a subject for general discussion. It is something also which teachers can intelligently contemplate thus reasoning out the value or the nonvalue of the use of such terms in their work of education; the editors of our dental journals have it in their power to very greatly assist the teachers by establishing, and using as well, the definite terminology to which attention has long since been called. The essays of some of our more prominent writers display every evidence of little intelligence, in so far as this relates to the use of correct terms. I am perfectly aware of what I am writing, for before me are dental journals for several months and some of the things therein printed are amusing. The expressions in almost constant use, and they come, too, from men who must know better, are astonishing. A few of them are, "the fillings in this mouth were," etc. Fillings are usually placed in teeth. If, however, dental operations are spoken of, let us at least remember that we fill cavities in the human teeth and say "teeth" and not "mouth," more especially when we mean teeth.

Now here is something which in reality makes interesting reading, and it comes from a person who should know better. The writer refers to cavities in the proximal surfaces. He says, "Approximal has exactly and only the meaning that the dentists wish to convey when talking of a cavity between two teeth."

This good man does not mean what he says, for a cavity between two teeth is usually a pyorrhea pocket, the outlet for an abscess of the third class, etc. What he means to convey is a cavity in the mesial or distal surface of any tooth, but he does not say what he means. I know what he means and feel that it is just as easy as not to say it.

In the recent number of a well known dental journal a very singular thing appears. During the discussion of the ideas contained in an essay the speaker is quoted as saying, "I prefer to saw from the bottom up." "Bottom" was a new term to me, so I went to Dunglison to ascertain what the speaker meant.

Bottom—Nates.

Nates—Two round projections, at the inferior and posterior part of the trunk, on which we sit, the *seat*.

(For purely personal reasons, I shall forego what should be said.)

The subject under discussion was the use of a small saw, in a Black saw frame, and its use in removing an excess of filling material from the interproximal space. The speaker wished to convey the idea that in using the saw he operated it from the gingival margin toward the occlusal surface, then why not say so? As the man who is quoted as saying the above is somewhat of a stickler regarding the use of terminology, I can not conceive why he permitted himself to use any such expression, much less have it printed.

In the August issue of one of our dental journals, the term "proximal" has again received some attention. On a number of occasions, and at various times during the past, something has been said regarding the use of this term. Twelve or fifteen years ago, in conversation with Dr. G. V. Black, I observed that he made more or less use of this term, while speaking of cavities which had taken place in the mesial and distal surfaces of the human teeth. Since that time on a great many occasions, while talking over dental subjects with Dr. Black, and also in his writings, he very often used the term "proximal." I naturally adopted the use of the word in conversation with him and have used it ever since.

(For the benefit of those who have so often written me regarding my use of "approximal" and "canine," as these terms have appeared in some essays of mine in the *Dental Cosmos*, let me say, the terminology which I used was corrected and that used which was standard with the *Cosmos*.)

If we know what is meant by the expression, "cavities in the proximal surfaces," why let us use that term. Why have the prefix "ap?"

It takes longer to write it, takes more time to set it up and it

takes a longer time to read it. If we have and use "approximal" naturally we should have "interapproximal space."

If we use "proximal" it naturally follows that we should use "interproximal space." The same thing is true if "proximate" is used. Teachers wish the greatest simplicity possible, so far as this relates to being able to convey what they mean in concise and definite language to their listeners. This matter of having and teaching certain terms in one section of the country and an entirely different set of terms in another section of the country, should long since have come to an end. We cannot have a profession of dentistry with the teachers in the East instructing their students to use certain terms to express certain surfaces of the teeth, while we in the West are using and teaching students very different terms from those in vogue by our Eastern teachers. For years I have taught men to use the term "proximal surface," as well as "interproximal space." The chances are as long as I teach that I shall use these terms, provided we can not have a better understanding of the use of terms than exists at the present time. I have never heard the term "mesio-proximal" or "disto-proximal" used. Cavities in the "disto-occlusal surface," or cavities in the "mesio-occlusal surface," are quite old friends of many intelligent men who live in this end of the country.

I have given a few examples of the terms in general use and commented somewhat upon them. There are any number of others to which I could call attention, but what is the use? I do not think that it would do any good. The reform in the use of terms must come from the editors of our dental journals, so that the readers of dental topics may have an awakening and in future essay writers will be more careful of the terms which they use to express the ideas they wish readers to consider. Let the members of the Institute of Pedagogics take up this matter and, if they feel that it is necessary, rearrange the already definite terminology, and then let it be taught by teachers in all our schools and let's all use it.

There is little use in speaking otherwise than in the plainest language. I believe that it is a very great injustice to permit the present condition of affairs to exist a day longer than is absolutely necessary. It is an injustice to ourselves, to the dental profession and to those who receive instruction from teachers.

It is an injustice to ourselves for the reason that there is so little

pride extant that we permit this state of affairs to exist when it lies in our power to correct it, and we can do so very quickly also.

It is an injustice to the profession for the reason that twelve years ago a Definite Nomenclature was presented for our use, and what treatment has been given it and the ideas which accompanied it? I have heard men complain and say that the dental profession had no standing, etc. Is it any wonder, when the men in the profession act as they do in regard to its advance? I ask, in all sincerity, How would we judge the men in the medical profession if a similar state of affairs existed among their teachers and writers regarding the use of terms as exists at present among teachers and writers in the dental profession? This is a subject over which it would be well to do some serious independent thinking and some intelligent contemplation may not be out of place.

It is an injustice to those whom we instruct, for the reason that later in life it does not place them in a position to either as quickly grasp or understand what other writers are trying to convey, on account of using different terms from those the listener is familiar with, or to have others understand what they themselves may wish to convey when speaking or writing on some dental topic.

This is not as it should be.

One of the most common things that we see in print is something on this order: "I filled that posterior cavity in the superior lateral or central with porcelain, for I believe that all anterior teeth should be filled with porcelain and not with gold."

How much better is it not to say, "I placed a porcelain inlay in the cavity in the distal surface of that upper incisor, for I believe that incisors and cuspids should not be filled with gold."

It is not a question of "style," but it is a question of "terms." "Superior," "inferior," "posterior," "anterior" and a host of other terms have long since been declared obsolete, yet there are very few dental journals in which these terms can not be found. The men in the dental profession do not wish to have or use many terms, the fewer the better. But the terms which we do have, let them be definite, standard, universal and, above everything else, let's all use them. Let the students who may be in Boston, New York, Philadelphia, Baltimore or in any other Eastern college have a copy of and use the same nomenclature which is in use among the students in Chicago, St. Louis, San Francisco, Portland and other places.

Do not let us continue this present, exasperating condition of affairs. Why just think of it for one instant, here is "morsal," "coronal," "canine" and "palatal" being taught one body of men, in one section of the country, while out here in this section of the country, we are teaching "occlusal," "cuspid" and "lingual" for the same terms. A profession divided against itself can not stand any more than the proverbial "house."

I have said enough. But in closing, I wish to add that I shall be the first to call attention to and to teach any revision of the present nomenclature which may be adopted by the editors of our dental journals or by the members of the Institute of Pedagogics, provided there is any revision made. Until that time, the nomenclature which has been so very useful in the past, and which at present so nicely fills the bill, will remain standard for some of us in this end of the land.

CAVITY PREPARATION.

BY RALPH W. STEWART, D. D. S., DANVILLE, ILL.

I feel that an apology is due the society in presenting this bit of ancient history, but since we must begin at the beginning, since the alternate success of any kind of filling must depend in a great measure upon the proper and careful preparation of the cavity, we will waive the preliminary and get at once to the consideration of that subject.

Before adjusting the rubber dam clear the cavity of all overhanging edges, debris and any softened portions of dentine, giving opportunity for frequent use of syringe using tepid water, to which has been added some good antiseptic, or alkaline solution, thereby adding comfort and cleanliness to the operation. Absolute dryness, however, is always to be desired in final preparation and filling of cavity.

Cavities are opened differently, according to location, size, etc. Located on occlusal, lingual or labial surfaces they are easy of access, but on the proximal surfaces they do not give ready access until

*Read before the Champaign-Danville District Dental Society, October 3, 1905.

space has been gained by some means of temporary separation, using almost any of the numerous wedging devices known to the profession, the prepared rubber wedge, absorbent cotton, etc. Small cavities are readily opened by use of pointed fissure, dentate, round or inverted cone bur, but in all cavities of admissible size it is more easily and quickly done by use of the enamel chisel, giving more direct and speedier access, thereby causing less discomfort to the patient. In removing the softened decalcified dentine from a cavity care should be taken to inflict as little pain as possible. Its thorough removal, however, is absolutely necessary to the success of after treatment. The method of procedure will depend upon the character of material to be excavated, whether we are dealing with white or chalky decay, which we find is the most treacherous and rapidly advancing, often almost to pulp exposure before the cavity is discovered; or with the leathery dark brown or black decay which takes place more slowly.

The first may be handled more easily by the use of round bladed or spoon excavators, lessening the liability to pulp exposure, rather than if engine burs were used. In removing decay the fact should be kept constantly in mind that the most sensitive portion of a tooth is at the periphery of the dentine just beneath the enamel, and that dentinal fibrillæ in advancing from the pulp to the periphery have a direction which is perpendicular to the surface of the tooth. Much pain may therefore be saved the patient if at the outset of the operation a few bold sweeps of the excavator be made around the circumference of the cavity and that all subsequent cuts of the excavator be made as far as possible to follow a line from the center to the periphery, rather than the opposite. The instrument should be kept sharp and each cut be decided, as scraping of sensitive dentine is much more painful than a firm, decided cut that accomplishes something. The greatest kindness that can be shown a patient under such circumstances is to be thorough and at the same time rapid. The meaning of the term thorough would necessarily depend upon the judgment and experience of the operator as to whether all infected tissue had or had not been removed. The only safe method, except in case of nearly exposed pulp, is to excavate until hard, sound dentine has been reached. Partially decalcified dentine may be allowed to remain on the floor of the cavity, as recalcification will usually take place. After the cavity has been

cleared of all infected tissue the next step is to give it such shape that the filling can not be mechanically dislodged, while at the same time the retentive shaping must not be carried so far as to weaken the walls or endanger the pulp. Deep undercuts, pits or grooves are not necessary to retain a filling; those of moderate depth are just as effective from a mechanical point of view while the danger from fractured walls or pulp irritation is greatly lessened.

We have all found that a single method of cavity preparation will not answer for all cavities, but that almost each individual cavity calls for its own especial forming. In small cavities if the depth is equal to or greater than the diameter, the walls may be left parallel, as the lateral walls will be sufficiently uneven to retain a filling. On the other hand, when the diameter of the opening is greater than the depth of the cavity the lateral walls will have to be somewhat larger internally to retain the filling. Proximal cavities in bicusps and molars should be shaped so as to secure as broad flat foundations as possible at the cervical wall for the support of the filling. In the case of compound cavities we may gain retention by use of dove tail, or if the loss of much tooth substance has occurred so that no other method seems practical, then by the use of screw posts set on opposite sides inclining toward each other or by a single post set centrally. It is never wise to set a post or make a groove or pit very near the enamel or in the incisal or occlusal surface, as their presence tends to weaken this part of the tooth and renders the walls liable to fracture. In the finishing or forming of cavity margins comes an exceedingly important part of cavity preparation, for from imperfectly formed margins comes no end of trouble in the way of leakage, etc., ending in the ultimate failure of an otherwise perfect and successful filling. Cut away all thin and weakened enamel, beveling the borders by cutting enamel rods in all oblique directions, for if they are cut perpendicular with the walls of the cavity certain of the enamel rods would have no supporting dentine and consequently would be more liable to fracture from strain in filling or force during mastication,

For convenience cavities are classified, simple and compound. We think of simple cavities as being those of easy access and preparation and found upon exposed surfaces, as on the labial surface of incisors and cuspids, and presenting usually but softened condition of enamel without serious loss of tooth structure, being easily pre-

pared by use of round burs and spoon excavators, using undercuts at bottom, or at cervical margins of the cavity for retention, with extreme care in forming of margins which should be beveled and finished as smoothly as possible so that the margins of the finished filling will present a perfect outline. Occurring in pits and fissures of occlusal surfaces of bicuspid and molars, simple cavities are also easy of access and instrumentation. The difficulty in operating is somewhat increased when located in the posterior part of the mouth, as in the case of upper third molars, but with properly curved excavators the right angle and reflected light it becomes comparatively easy. In opening follow carefully the sulci in every direction and deep enough to reach sound tissue, being sure you have removed every particle of decay or softened dentine and enamel, avoiding sharp angles and finishing with margins well beveled. Often the occlusal surfaces of bicuspid and molars will be found so badly decayed as to involve the cusps, making a large open cavity extending over the entire surface of the tooth. In preparing such a cavity the occlusal edge should be ground down with the corundum wheel until strong walls are reached, then after removing all decay, shape the cavity with edges beveling inwardly.

In the treatment of simple proximal cavities we encounter something a little more difficult, owing often to their inaccessibility, rendering temporary separation necessary, and even after such separation is obtained portions of lingual or labial walls are to be sacrificed in order to get a good view of all parts of the cavity, using care not to remove more than is necessary to obtain strong margins. Cavities of this kind also occur where it becomes necessary, on account of a delicate and weakened occlusal edge, to remove the entire corner of the tooth, and by so doing it may be, convert the cavity into a compound one, where an extension arm, preferably on the lingual surface, may be resorted to. This, however, must not be placed too near the occlusal edge for fear of fracture later.

In the case of molars and bicuspid where cavities have occurred on the mesial and distal surfaces we find considerable difficulty in gaining access. We may gain admission by the usual temporary separation or, if impractical, then by entering through the occlusal edge until the cavity is reached, or as a last resort by extending the cavity to buccal surface. The first should receive the preference,

being the best and safest plan, is the strongest mechanically and is easiest of entrance, preparation and filling.

Compound cavities present many variations, being formed by the union of two or more simple cavities. In incisors and cuspids we find cavities in the mesial and disto-labial surfaces separated perhaps by a narrow neck of tooth structure which in preparation should be removed, margin well prepared and proceed as before. In bicusps and molars we encounter cavities in the occlusal to be connected with those in mesial or distal surfaces, or those on the occlusal to be joined with both mesial and distal surfaces, the preparation of which is in great measure the same as in simple cavities.

Rarely we find cavities uniting the buccal, lingual and occlusal surfaces and usually in lower molars these may be treated as in case of any of those already mentioned. I can prescribe no set rules for the preparation of cavities other than a few simple facts:

- (a) Shaping the cavity with parallel walls if possible.
- (b) Having a flat and not a round base if possible.
- (c) Letting the base be the foundation and anchoring the filling therefrom.

DISCUSSION.

DR. G. M. HANLEY, HOOPESTON:

It is with pleasure that I attempt to discuss, in a very brief way the paper of Dr. Stewart.

In my opinion, this is one of the broadest subjects that dentistry affords and it has been ably handled by the doctor. I believe as he does, in an honest preparation of the cavity, and I will add that no two cavities present the same problem to you, and their preparation will depend entirely upon their location, size, strength of walls, and the endurance of the patient. How often we are forced into doing something undesirable, in preparing a cavity, by the patient not being able to stand having it done in the way it should be.

In my opinion, there is no set rule for preparing a cavity, and the method must be determined after seeing it. Dr. Stewart has said: "First cut away all overhanging tissues," and it is well said, for in order to get the right kind of preparation you must make a good foundation, if such can be had. It is much better to cut away the outer walls, and to replace them with filling material, than to

leave them to crumble away in a short time, leaving rough, jagged edges, which annoy both the patient and the dentist.

In my practice I have always endeavored to give my patient an honest preparation. I mean by this that I have been careful to tell the patient just what he may expect from the tooth about to be prepared, and I am especially careful to explain what, in my opinion, will be the durability of the work. We all know that in some mouths the same work, under the same skill, will be much more durable than in other mouths, and I think we should be candid with the patients, and explain this to them.

I do not think any cavity should be excavated without the dam being adjusted. I consider it out of the question to do thorough work in all cases unless it is used. Of course, we all cut it out sometimes, and we all make some failures, if we are ever so careful. I will say that in my judgment, the "perfect dentist" is still in the dim future.

THE IMPORTANCE OF CLEANSING THE TEETH BY THE DENTIST.*

BY DR. F. M. CONKEY, HOMER, ILL.

In writing this paper I have tried to look upon the subject in a general way, not confining myself to any special branch, or the merely cleansing of the teeth by removing any deposits at the necks and gingival spaces.

In the earliest records we find that certain classes of dental diseases were treated only by physicians, certain descriptions and directions for such work being outlined from a purely medico-therapeutic standpoint, showing such treatments as a recognized part of the earliest medical practice.

The proper cleansing of the mouth or better, perhaps, oral hygiene, has attracted the attention of the dental profession more of late years than ever before.

*Read before the Champaign-Danville District Dental Society, October 3, 1905.

Coulter's "High School Physiology" states that the third molars make their appearance about the twenty-fourth year.

The same author says the teeth should be thoroughly brushed at least twice a day, on rising and on going to bed, and adds it would be better to cleanse them after each meal also.

The same writer suggests that in using toothpicks care should be taken not to dislodge fillings.

You will notice Coulter is in error as to the time of eruption of the third molar, the age of eighteen or nineteen being more nearly the average time.

His advice as to the care of the teeth is by no means satisfactory. He advises brushing the teeth twice a day, on rising and on going to bed.

He then adds after *every meal* would be better.

After *every meal* should have been made emphatic, and it would have appeared much better had he omitted the twice a day suggestion from his textbook.

Brushing the teeth after the last meal is excellent advice, but coupled with what precedes it teaches a lack of thoroughness.

The unnecessary caution given in this textbook regarding the dislodgment of fillings by the use of toothpicks would be amusing were it not an unwitting reflection upon the skill of the dental profession. A subject of so much importance deserves more than simply passing notice in our high school physiologies.

We as dentists should go directly to the teachers, parents and children with plainly stated facts regarding hygienic condition of the oral cavity.

I will say but a very small per cent of children, from the youngest in the family to the oldest, ever eat a meal without first washing the face and hands.

But when you say, do you brush your teeth after each meal? then comes a blush or smile over the child's face which answers the question plainer than when they say, No, *I did not think that was necessary, or I have no tooth brush, or Mama and Papa do not do that, so I don't.*

Should not the dental profession produce such a text book for our public schools?

Such a work containing nothing but practical teachings regard-

ing the care and preservation of the teeth, the prevention of diseases, the causes of irregular teeth, and the influence of an uncleanly, unhealthy condition of the mouth upon the general system.

This reform, it seems to me, can only be reached through our public schools.

Parents whose habits and prejudices have been formed are not easily convinced of the necessity of using the brush and properly caring for the teeth.

The time has come when the dental profession should act, and act wisely, in regard to educating the public on the subject of cleanliness of the oral cavity.

Mastication is a first step in a series of processes for the digestion and assimilation of food and unless this process is thoroughly and hygienically done the digestive system and the general health must suffer the consequences. Food can not be well masticated with diseased and aching teeth, nor is the food clean and healthful after being masticated by such teeth covered with decomposed vegetable and animal matter, which not only vitiates the food before it reaches the stomach but poisons the life-giving oxygen before it reaches the lungs.

We could attribute typhoid fever and kindred diseases as not being infrequently the result of the effluvia arising from decomposed vegetable and animal matter in and around the teeth.

Why should it not be so? We all admit that rotten vegetables in our cellars and poisonous germs in the water we drink will breed diseases.

Gum infection and the ease with which this infection results in pyorrhea has long taught the thoughtful dentist that all dental substitutes must be constructed primarily so that they can be kept scrupulously clean.

Cultured men will never again harbor fleas willingly, and the time is surely coming when it will be considered equally revolting for a mouth to swarm with micro-organisms of putrescence and disease.

We are the ones by whom this reformation is to be secured, and therefore we should be the last to increase the contamination in the mouth of our patients through filth collecting appliances.

Many a dentist when cleansing a set of teeth covered with putrescent tartar has wished that he could take those teeth from the

mouth, scrape them, boil them in some antiseptic, polish them on the lathe and put them back in their original sockets. He knows in his heart that this is the only method by which he can be absolutely sure of making such teeth perfectly clean and the gums free from infection.

But as this is not feasible, he, through three or four sittings, with the necessity for his greatest care and skill, scrapes and sterilizes almost as well as he could do in a few moments if the teeth were out of the mouth and in his hand.

The perfect cleansing of infected gums and teeth is now recognized as one of the most difficult operations that the dentist has to perform.

Perfect cleansing of the teeth is a task that the average patient can not do for himself without professional assistance.

Unless a dental appliance can be kept as clean as the tooth could be without it, such appliance has no excuse for existence.

Mouths at the best are none too clean.

He who places filth collecting appliances, no matter how beautiful they may appear, has injured where he claims to have benefited.

HYGIENE OF THE MOUTH.*

BY JOSEPH W. WASSALL, M. D., D. D. S., CHICAGO, ILL.

There are two principal pathological conditions which menace the integrity of the human teeth, viz., "dental caries" and "pyorrhœa alveolaris."

That the presence of certain microorganisms which make their habitation in the mouth is the active and exclusive cause of these two diseases is now an undisputed fact of science.

The modern practice of the profession of dental surgery amply demonstrates its ability to permanently restore lost tooth structure and reestablish loosened teeth. Does it perform its whole duty to the human race in securing that degree of immunity to these diseases which its general understanding of their etiology would warrant?

*Read before the Odontological Society of Chicago.

You must agree that the profession as a whole performs this duty in a very partial manner.

Presidents' addresses in conventions, college professors, editors of periodical literature and writers of text books take pride in designating dentistry as one of the learned professions—but its members toil on day after day and year after year with eyes shut and dumb to the call of humanity to be led out of darkness and disease.

Knowing and understanding well what prophylactic measure would be effective in preventing these two diseases their brains and faculties sleep blissfully on. Surely we are damned forever unless we let our light so shine before men that they may see our good works.

The principles of prevention should be perfectly plain. .

Let us briefly review them.

”

Colonies of pathogenic bacteria can not flourish in the mouth except in an environment favorable to their growth. This environment must include warmth, pabulum (or a culture medium) and rest. Any agency which removes or destroys even one of these three conditions is fatal to the growth.

Practical results for our purpose are best and easiest obtained by destroying the factor enumerated last, viz., “rest,” for it is a reasonable inference that a mechanical disturbance of the conditions favorable to bacteria in the mouth twice in twenty-four hours is sufficient to prevent any evil effects from their presence. Indeed, practical observation bears out this view.

It therefore becomes our bounden duty to fully instruct all who come into our professional care in a method or routine in the personal hygiene of the mouth which will be effective in preventing a continuous growth of microörganism. Perfect results are modified by local conditions which predispose to the growth of microörganism in the mouth, such as a depraved general physical condition, irregularly placed teeth, abnormally rough fissured enamel and soft gum tissue due to the nonuse or insufficient brush friction. It is needless to say all such conditions should be corrected as far as possible.

To use a tooth brush. That sounds like a simple matter. Many many people go through its performance in a way four or six times daily. But how many of the people you see every day give evidence of its having been effectively done.

It is leading a man into higher life to put him on the right track in the personal care of his mouth. It requires consummate patience, perseverance and tact to induce the average man or woman to use the tooth brush in a proper fashion at the right intervals for adequate length of time. Indeed in many cases the patient's moral nature must be rebuilt and if your efforts are crowned with success it will be because you have indeed endowed him or her with some of the noblest fruits of character.

I have nothing new to add but in emphasis of what has been often repeated before this society. In giving instructions to patients never say "brush the teeth," say "brush the gums." If the gums are brushed sufficiently the teeth will take care of themselves.

The gums of the upper jaw are to be stroked with the brush only downwards, and of the lower jaw upward. If there is tenderness or a tendency to hemorrhage handle the brush gently for some days to avoid injuring the tissues, even using a soft brush until the gums have become somewhat toughened.

But the part from which the blood flows is to be brushed with fresh cold water until the bleeding is checked. This method is contrary to the usual advice or practice, but is a positive cure—except in the presence of deposits. Persistent hemorrhage always means deposits.

There is an excellent mechanical reason why the particular motion of the brush here recommended is more effective than the cross-wise motion. I do not refer to the claim that the brushes pass into the inter dental spaces; that is impossible and erroneous. The true reason is as follows: The fluid with which the brush is saturated is pumped through the spaces between the normal teeth at each sweep, thereby dislodging any food debris or bacterial growths. The brush pressure upon the slightly elastic or compressible gum tissue gives a pumping motion to the inter-dental gingival projections, which I believe is responsible for the peculiar efficacy of this method.

An intelligent pursuit of normal conditions along these lines will realize a state of mouth health the ideal of which is well described by an old English saying, "As clean as a hound's tooth."

FACTORS IN THE MANAGEMENT OF THE TEETH OF CHILDREN.*

BY HENRY L. BANZHAF, A. B., D. D. S., MILWAUKEE, WIS.

It is not my purpose to pretend to do more in this paper than briefly touch upon the most important phases of this interesting subject; particularly those features which appeal to me as being especially important. Before taking up a consideration of definite operative procedures for the care of either the deciduous or permanent teeth, I shall endeavor to treat this subject in a general way with a view of studying this problem from the broadest possible viewpoint.

The cause of decay of the teeth of children is, of course, practically the same as in the teeth of adults, viz., lack of cleanliness. Every effort to teach children to keep their teeth free from deposits often seems like a hopeless task. It is all the more perplexing when we realize that the present method of living is the important factor to reckon with.

For a goodly number of years past we as dentists have preached to parents and to our little patients that the use of the tooth brush was absolutely indispensable. This, of course, is true and can not be too strongly insisted upon. At the same time, every operator of experience and observation knows that notwithstanding his most persistent and painstaking efforts to educate the public along these lines, the result thus far has been far from satisfactory. Furthermore, we are forced to admit that many cases have come under our observation where proper hygienic habits are formed early in life, are persistently followed and yet the patient seems unable to keep the teeth scarcely more than reasonably clean. A random examination in these cases usually discloses the fact that not only are the surfaces commonly recognized as areas of liability covered with a film of debris, but even the surfaces usually kept clean by the action of the tongue, lips and cheeks in mastication are involved. To find intense liability to decay under such circumstances can of course occasion no surprise. The question here naturally arises what can we do in order

*Read before the Southern Wisconsin Dental Society, Racine, May, 1905.

to induce our patients to adopt a natural process by which the teeth may be kept clean.

The answer to this question is, by the establishment of wholesome dietetic habits. This, it seems to me, in addition to observing the laws of oral hygiene, is the only solution of this very perplexing problem.

In carnivorous animals, and uncivilized and barbarous races we find the teeth to be uncommonly clean. We also find that usually the teeth of children forced to live in humble circumstances, eating coarse food, and even this not too plentiful, are not only clean, without even knowing what a tooth brush looks like, but also generally speaking quite free from caries. It may be urged that the position of the teeth in the arch may have had much to do with this condition. Granting this, the fact nevertheless remains that I have often noted this unusual condition of cleanliness existing in the mouths of poor children where the position of the teeth in the arch was not normal. The importance of this is that it proves the proposition, that the best cleaning the teeth get is the cleaning which results from the proper mastication of proper food. This at once introduces the question of what is proper food for children, with special reference to the development and maintenance of a healthy condition of the teeth.

It is an established fact that one of the factors in decay of the teeth which must be taken into account in the future is the physical properties of food stuffs. Miller, in his latest work, charges that as a rule "sticky, doughy, and semi-soluble substances will be found to be most injurious to the teeth." It has been demonstrated by experimentation and observation that foods of a character readily fermentable, especially if soft, sticky and slowly soluble, quicken and intensify the process of fermentation in the mouth, and as a result the destructive process of decay is greatly accelerated. By observing the behavior of foods in our mouths we soon discover that the readiness with which foods lodge on and about the teeth varies greatly. For this reason we should recommend such foods for children which are, generally speaking, coarse in character, are not readily fermentable and do not lodge easily in pits and fissures, or upon the approximal surfaces.

Among other things, the menu for the breakfast of a child or young person should call for the coarser breads. If rolls are wanted

they should be crisp and well baked. The coarser cereals such as shredded wheat biscuit may be recommended with benefit. In considering the food for the meals following it should be remembered that meats should be eaten at least once a day. Meats well cooked ferment readily in the mouth, hence a child should be trained to prefer rare meat to meat well done, as a daily diet. In this connection the important thing to remember is, to feed a child such food which requires thorough mastication and in so doing assist in keeping the surfaces of the teeth clean.

Time will not permit enlarging upon the possibilities of physical development along this line, but I beg you to bear with me in elaborating more fully upon what is implied by the term, thorough mastication.

I take it that we all appreciate the fact, that almost daily patients come under our observation who are not using their teeth as they should be used in order to insure their permanent usefulness. In discussing this question with parents, whenever opportunity presented, I found that the general complaint is that their children have poor appetites and can not be induced to properly chew what is offered. Furthermore, it is a notable fact that these dietetic habits to which I have referred exist chiefly in the homes of the wealthy and those in comfortable circumstances.

That this is a serious problem, which if not corrected surely will affect the future of our citizenship, no one can deny. The investigation of Pavlov go to prove that when there is an absence of a good healthy appetite, under conditions which may be considered normal conditions of life, that the digestive juices are not secreted in proper quantity and kind. This means that the desire to eat must come from within. This derangement in the digestive organs frequently is caused by the fact that children have access "ad libitum" to food between the hours of regular meals. Parents quite generally, I find, are altogether too anxious that their children shall have access to food at home whenever the desire for food seizes them. This, I feel, is not as it should be. Children certainly should not be starved; but I am of the opinion that an over-abundance of food, which is altogether too easy to obtain, is a pernicious practice to adopt in the upbringing of children, not only for their physical well-being, but also for the well-being of their teeth.

Opportunity for vigorous physical exercise should be furnished to our children. Unless this important feature in the growth and development of a child is rigorously observed, we can not expect that a healthy, vigorous appetite in the child will be a matter of daily occurrence.

The problem of thorough mastication of food is a matter less difficult to regulate. If parents will take the time to teach a child that meat, and for that matter all foods, should be properly chewed in order that the nice, rich juice may be extracted, and how this makes the boy and girl grow and develop, the result will more than repay the effort. Haste in eating our own meals is a very poor object lesson to our children, and I can not refrain from expressing the view, that mental quietude, and the absence of all haste and excitement during the meal hours, presents great possibilities for improvement in the methods of living in this day and age.

In considering the questions of thorough mastication of food, it becomes at once apparent that this is impossible unless the teeth of the child are in a healthy condition, and this brings me to a consideration of the management of the deciduous teeth. The object in view, of course, is to keep these teeth in as healthy a condition as possible, in order to insure the comfort of the little patient until such time as the deciduous set is lost by a natural process. The public generally does not yet appreciate the necessity of caring for these teeth as it ought. The belief that because the deciduous teeth are replaced by a permanent set later on, and therefore require no special attention, except possibly for the relief of pain, is altogether too prevalent.

Without enlarging upon the possible injury to the general health of the child, the question of evil habits of mastication which are so easily formed early in life, and which almost invariably are the direct result of decayed teeth, is worthy of our serious consideration.

Any one of the deciduous teeth which may be affected by decay will in time, unless it receives attention, become so sensitive to the touch that thorough mastication of food is impossible. If this condition is permitted to continue any great length of time without relief the habit of chewing the food upon one side alone, or of only partially chewing the food, or both, may become a fixed habit which is apt to cling to the patient through life. As soon as teeth are deprived of a proper amount of exercise their function becomes impaired. The

peridental membranes become tender and thickened, which results in the unconscious avoidance of the use of the teeth of that side of the mouth which is affected.

Children should be brought to the dentist at least three or four times each year, and parents should be made to realize the necessity of frequent visits, thereby avoiding much unnecessary pain and serious complications which must result, where the precautions indicated are not adopted.

The problems which have always appeared to me to be the most difficult of solution, in the care of deciduous teeth, relate to exposure of the pulp and management of the approximal surfaces of both molars are involved. When a pulp becomes exposed in a deciduous molar, especially when two or three years must elapse before the bicuspid is erupted, the final issue is of greater moment than is realized by many.

The proper procedure in such cases calls for the removal of all loose debris, and the adoption at first of palliative measures. The pain incident to exposure of the pulp can usually be controlled by syringing the cavity with tepid water; this may be followed by the application of oil of cloves slightly warm, applied on a pledget of cotton. When the pain is relieved steps should immediately be taken to protect the pulp from further irritation from without. A method which has proved itself of great value is as follows: Exclude moisture, if possible, cap the pulp with a paste made of oxide of zinc and oil of cloves. If there is a sharp twinge of pain following this, it is best to wait a few moments until the pain has subsided, then fill the cavity with cement. It is, of course, not expected that the pulp can be saved alive. Usually it will die in a few weeks, but, during the period while this change is going on, it keeps the tooth comfortable. The first sign of discomfort is usually evidence that the pulp is dead, and when this appears the patient should be instructed to return, the cement filling removed, the canals thoroughly cleaned, and filled in the usual way. Often, indeed, there is no discomfort following the capping of the pulp, the tooth remaining comfortable until it is shed. Arsenic should never be used in the treatment of deciduous teeth.

In cases where there are large cavities involving the proximal surfaces of both molars, the work of restoring these teeth to usefulness and comfort becomes more difficult. This difficulty arises from

the fact that on account of the process of expansion of the jaw which is in progress, the interproximal spaces become widened to such an extent that the spaces between the teeth are usually packed with debris and food, which, of course, occasions much discomfort.

To fill these cavities separately does not remedy the difficulty even though a perfect point of contact may have been provided. This is due to the fact that the teeth will continue to drift apart by reason of the expansion already referred to.

Many suggestions have been offered, but the one offered by Johnson of bridging the interproximal space and joining the fillings where amalgam is used has proved itself the most useful in my own experience.

This can best be accomplished by placing a metal bar across the interproximal space, letting the ends rest upon the gingival wall of each cavity, and completing the operation with amalgam. A good anchorage is thus afforded by locking the teeth securely together. This operation, of course, is not always indicated, inasmuch as no set rule can be laid down which can be made to apply to all similar cases.

The wisdom and judgment of the operator should best determine the limitations of any one method which may be advocated for special cases and its indications and contra-indications carefully noted.

MANAGEMENT OF THE PERMANENT TEETH OF CHILDREN.

This question is too broad to permit of more than a few general observations at this time. In looking over the literature on this subject I find that notwithstanding the efforts that have been put forth in recent years, many dentists still appear to believe that the choice of materials to be used in filling the permanent teeth of children should be selected with special reference to the age of the patient as it relates to the hardness and softness of the teeth. This belief appears to be based upon the question of permanency of filling operations in these teeth. That the teeth of children decay more rapidly than the teeth of adults is a fact long established by clinical observation, likewise the fact that it is much more difficult to do permanent work in the mouths of children than in adults.

The notable work of Black would indicate that the difference complained of as between child and child relating to the permanency of filling operations, is a difference largely in the physical structure of the teeth and not in their chemical constituents,

There are, however, other factors which enter into the selection of filling materials, most notable among them being temperament and the physical condition of the child at the time it is presented for a dental operation. It is this factor as much as any, I believe, which has much to do with the permanency of our work. If a child does not possess the strength to withstand the wear and tear incident to permanent work, then temporary measures should be adopted until the physical condition shows the necessary improvement.

For all pit and fissure cavities gold or amalgam seem to be best suited, except in unusual cases sometimes growing out of a retarded eruption of the molars, when cement may be conveniently used until the gum tissue has receded from the occlusal surface.

When cavities occur very early in the anterior permanent teeth, and for physical reason extensive cutting is not possible, cement or gutta percha should be used, as a temporary expedient.

In nearly all other classes of cavities occurring in the anterior permanent teeth of children, especially when the question of expense need not be considered, I have found porcelain to be the most satisfactory and producing the most permanent results.

It possesses qualities not found in gold, and although occasional contra-indications should be carefully noted, and heeded, yet all things taken into account, porcelain as a filling material presents unusual promise of lasting benefit to the human race, especially of benefit to that growing body who shall be the future men and women of the civilized world.

It does not seem proper to close this paper without at least referring to the change of professional sentiment which has taken place in recent years respecting the importance of the permanent preservation, when possible, of the first permanent molar.

That we as a profession have learned to fully appreciate this factor, as a means of preserving the proper relation of the jaws to each other, is largely due to that earnest body of men who have interested themselves in the field of Orthodontia, and to them we should willingly ascribe all praise.

REMOVABLE BRIDGEWORK.*

BY F. E. ROACH, D. D. S., CHICAGO.

The subject of oral hygiene and prophylaxis occupies a prominent place in the minds of our profession at present, and with but one exception—that of porcelain—it is receiving more attention than any other subject. Our journals are teeming with articles on the various phases of this all important part of our work, and the indications are that we are rapidly approaching a realization of our real mission—preventive rather than reparative measures in our practice and instead of mere mechanics engaged continually in the repair of the lesions met with in the oral cavity we are to assume the role of preservers of the normal organs.

Never was there such a crusade against decay of the teeth as at present. Many of our ablest men are engaged in scientific research with the view of obtaining a better understanding of its etiology and a more definite means of cure and prevention. The profession in general are fully cognizant of its ravages and we are putting forth our best efforts in our endeavors to cope with it. The public at large is thoroughly alive to the importance of oral hygiene, and is, in a measure, helping us in this great battle. We are deluged with all sorts of antiseptic mouth washes, pastes and powders, all of which we are told will prevent decay of the teeth, make them pearly white, and render the breath sweet and wholesome. Altogether we are doing much in oral hygiene, but after all are we consistent? Why spend hours cleaning a few remaining natural teeth for a patient, and then supply them with an artificial cesspool in the form of stationary bridgework as a substitute for those that have been lost? Are we practicing oral hygiene in any case where we use the stationary bridge with either the saddle or the so-called self-cleansing space? My answer is emphatically *no*. And not only are we not practicing oral hygiene, but we are practicing oral pollution and infection. In my opinion the only approximation to sanitary conditions in fixed bridgework is one or the other of the following forms: The solid gold

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bridge where occlusal surface only of dummies is supplied, and these should have smooth, well-polished convex surfaces on side next to gum and with ample space for brushing and clearing of food. This form of bridge is limited in its application and is seldom used other than to supply lower posterior teeth. The ideal of this class is the porcelain bridge devised by Dr. G. W. Schwartz with which you are all no doubt familiar. The other form of fixed bridge that possesses sanitary possibilities is the all-porcelain bridge constructed with narrow, well-fitted saddle and in very carefully selected cases.

The above mentioned forms of fixed bridges are mentioned as sanitary possibilities in contradistinction to the sanitary impossibilities of the bridge constructed with the so-called self-cleansing pocket lingually and with very imperfect gum contact labially or buccally. This, the almost universally used form, is the class of bridgework I would condemn on general principles. They are without exception the harbors of the accumulation of foods and foreign matter which affords ideal culture media for bacterial growth and are the source of malodors I shall not attempt to describe, as most of you are familiar with them.

From a point of usefulness and comparative permanence the fixed bridge has a fairly good record, but in view of the unsanitary feature just referred to I have almost wholly abandoned its use in my practice—much to the satisfaction, however, of my patients and myself.

Another very serious objection to the fixed bridge is the necessity, in a great majority of cases, for a very extensive destruction of the remaining sound teeth—a practice which most of us, no doubt, have allowed the pecuniary side of the question to influence us. It is a lamentable fact that the larger fee obtainable for bridgework as compared with partial plates too often accounts for its adoption. Then, too, we often allow our patients to dictate to us the kind of work we shall do for them and in many instances we place fixed bridges in places where in our own judgment some other means of restoring the lost teeth should be resorted to. We are ourselves largely to blame for the prejudice of the public against removable bridges—we are also responsible for the extensive use of fixed bridges. You may ask why are we to blame; my answer is that for one of two reasons we persuade our patients to have fixed bridgework. First of all, with

the large majority of operators there is the lack of confidence in their ability to make a success of the removable bridge, and secondly, that question of greater remuneration. Why can not the average operator succeed with removable bridges equally well as with fixed? For the reason that in the first place he does not as a rule take the same care in construction; but the main reason is the fact that the bridge is not cemented hard and fast in the mouth of the patient and he or she, as the case may be, must wear it. There is no getting used to it by degrees. How many fixed bridges would be worn if it were not for this fact? It is a reflection upon our skill, but it is nevertheless true that cementation in many cases accounts for what is called success. Better call it in many cases enforced acquiescence.

That the fixed bridge has not a place I am not prepared to say, but that the removable bridge has a wider field, with greater possibilities and many advantages, I am thoroughly convinced. Enumerating some of the advantages of the removable over the fixed bridge, we have incomparably a more sanitary denture, greater possibilities of restoration of the lost tissues, whereby more natural and artistic results are obtained. Repairs are made simple and easy, and any subsequent repairs upon adjoining teeth are more simplified and less destruction of natural teeth is required for abutments. Another advantage of no small importance is the fact that good, serviceable, as well as very artistic bridges, may be made with vulcanite base at a very moderate cost.

The ideal material for this class of work is porcelain, and, where cost is not a consideration, it may be almost universally used. Next in order of preference is the gold saddle, with porcelain teeth soldered thereto and usually some of the manufactured porcelain crowns is most suitable. Then again, as stated before, good results may be obtained with ordinary rubber teeth and vulcanite base. Several systems of anchorage have been devised, and while they differ in some respects they are in the main all quite similar. The little device I am showing you has, I believe, some features not possessed by others, some of which are as follows: Paralleling of tubes is not necessary, leverage on anchor tooth is eliminated, appliance is less in the way of adjacent supplied teeth, spring part of attachment is on denture instead of in the mouth, so that adjustment or tightening is more easily accomplished, anchorage may be made in gold inlays, gold or

amalgam fillings, or anchorage may be made directly to sound teeth without either filling or crowns.

Briefly, the parts of the attachments may be described as follows: Part 1 is a round tube having an open side with flanges extending therefrom for its entire length. It is made both in 22k. gold and platinum. Part 2 comprises the anchor attachment and consists of a split ball with two wings or projecting stems, which stand out at almost a right angle to each other. The upper stem and split ball enter the tube and the former serves the purpose of closing top of tube in the finished work, also acting as a stop to prevent lateral movement in bridges anchored on but one side of arch; it also prevents partial dentures lifting at the heel.

The second or riveted stem is either imbedded in the vulcanite of denture or soldered to the metal base where the latter is used. This part (2) is made of clasp gold, and also of composition metal. The split ball is made slightly larger than the tube, so that when forced to place the two halves of the ball are pressed together and the tension is maintained by the spring of the metal.

The attachments are equally useful in all forms of partial plates and in this connection will say that no partial plate should be allowed to come in contact with the remaining natural teeth nor to impinge upon the gum around the teeth.

PRESIDENT'S ADDRESS.*

BY H. T. SACKETT, D. D. S., FOND DU LAC, WIS.

It is with pleasure that your president greets the members and friends of the Wisconsin State Dental Society at its thirty-fifth annual meeting, and extends to you all a sincere welcome to its sessions.

This occasion is full of inspiration for those who delight in the success and growth of our profession. The contemplation of the intellectual and educational results which the Wisconsin State Dental Society has wrought within its life of thirty-five years, serves to re-

*Read before the Wisconsin State Dental Society, Oshkosh, July, 1905.

instate our belief that the value our members place in the things to be desired, is not altogether measured by immediate returns in money. As we view the unprecedented American rush for wealth and trade advantages, we are apt to give entrance to the fear that professional service does not receive the reward that it is entitled to. We hear the din and shouting of money getting, and we are not always certain that in the midst of it all, its steady voice of conscience is pleading for better things.

The months preceding this meeting have been very busy ones for your committees, who have devoted much valuable time to the work assigned to them, as attested in a measure by the program.

The executive committee, under the leadership of Dr. Chilson, has obtained for us essayists of national reputation, to all of whose words we can listen with pleasure and profit.

Dr. Christianson, of the clinic committee, has secured clinicians of large experience and prominence, and leads in interest and variety and helpfulness any series of clinics ever presented by any state society. The other committees have also done most faithful and effective work, which adds much to the credit and prestige of our society.

Our secretary, Dr. Mueller, who has so faithfully served this society during the past years, has been untiring in his efforts to make this, our thirty-fifth meeting, excel all others.

It gives me pleasure to advise you that our membership is increasing.

I desire at this time to impress upon the younger members the advantages they will derive from active work in this Society, and to urge their hearty coöperation in the work the Society is endeavoring to accomplish through its members, thereby elevating the standard of our profession. As you help the Society you benefit yourself, and the Society will be advanced in the confidence and respect of the profession and the community.

Your executive committee has inaugurated two innovations this year, the first being the setting aside of the hours from 7 to 9 a. m., and 1 to 2 p. m., so that the exhibitors may have an opportunity to display their materials, giving it up to them in order that the regular work of the Society may receive the undivided attention of the members during its regular sessions. The second innovation is a banquet, to be participated in by our members, guests and exhibitors, to-

morrow evening after the afternoon session of the Society, at the Tremont Hotel.

INTERSTATE FRATERNITY.

In the line of Society endeavor, there has been organized the Interstate Dental Fraternity, whose aim is to band together the profession in all parts of the country, not to discuss dental topics, but to encourage brotherly sympathy and good fellowship.

The growth of the fraternity has been remarkable, and the good already accomplished immeasurable. It is the desire to further increase the membership in Wisconsin.

REORGANIZATION.

I would recommend to the Society a plan of reorganization similar to the one adopted by the Illinois State Dental Society, at their annual meeting held at Moline on May 9 to 11, 1905, which called for a radical change in its constitution in order to effect a reorganization which contemplates a close affiliation of all the dental societies of the State, and by which it hopes to assist in the organization of many new local societies, all of which shall work together for the good of the profession.

The time has arrived when the members of the dental profession must be better organized if they wish to accomplish those things which are necessary for advancement. We must be able to work systematically, and work together if we expect to progress. The present lack of organization is well established by the fact that we have comparatively few local dental societies in the State. We can not place too much value in a local society acting in harmony with the State Society.

There are over fourteen hundred dentists practicing in Wisconsin. Out of the fourteen hundred in Wisconsin a large number are members of some Dental Society, local, district or state, and many are members of two or three societies. The Wisconsin State Dental Society has about 220 members.

There are three distinct societies, the Milwaukee Odontological Society with about sixty members; the Southern Wisconsin Society with one hundred members; and the Fox River Valley Dental Society with forty-five members.

There are a number of local societies throughout the State,

already in existence, and I am advised they are accomplishing good results. We have a very thrifty society in Fond du Lac, which it has been my pleasure to preside over during the past year, and I believe every member will bear me out if I say the coöperation has been a benefit to each and every member.

The subject of the examination of the mouths of children in the public schools, is receiving more and more discussion, and dental societies in several States are sincerely advocating measures for its adoption. Too much stress can not be paid to the matter, in my judgment. I would advocate the matter being taken up by our own State Society, so that in this, as in all matters pertaining to the elevation and advancement of our calling, Wisconsin may be considered progressive.

I can not close this address without publicly thanking the members of the Wisconsin State Dental Society for the honor they have conferred in thus elevating me to the highest position of trust in its power to bestow—that of its president. I thank you one and all for your most loyal and hearty support.

I would like to add a few lines which I have not written, but which have occurred to me today. I would like to see a standard law which would allow our graduates to practice in every State. They take their examination, and let that examination be good in all States, in a nutshell, reciprocity.

PROCEEDINGS OF SOCIETIES.

ILLINOIS STATE DENTAL SOCIETY, MOLINE, MAY 9,
10, 11, 1905.

DISCUSSION OF DR. GOSLEE'S PAPER, "PORCELAIN BRIDGEWORK."

DR. W. H. TAGGART, Chicago:

The paper is a very conservative and masterly presentation of the subject of porcelain bridge-work, and the very few remarks I shall make will be to corroborate and emphasize what he has said, and I hope by my enthusiasm to encourage you to try it. The great mistake the majority of you are making lies in the fact that you are waiting for some perfected way to be presented, and you are forgetting that when the time comes for this perfected process to be adopted as orthodox you will not be able to recognize its merits or possess the skill to apply the principles laid down.

While the manual dexterity you have attained in the construction of gold bridges will be very helpful to you in the construction of porcelain bridges, still you must wake up to the fact that there are some underlying principles in the construction of this most beautiful work, which you can not ignore, and expect satisfactory results.

Fully three-quarters of the so-called porcelain bridges that I have seen, and that were failures, have been made just as a gold bridge is constructed, only using porcelain to flow in the joints instead of gold solder. To construct a porcelain bridge this way and expect good results is foolish, and yet many have done so, and have said: "I tried porcelain bridges and they were failures." Of course they would be failures, but they would not be disappointing if the special principles necessary for their proper construction had been applied. You might with equal propriety try to construct a continuous gum denture, and use the same methods you would for a vulcanite case.

As Dr. Goslee says in the paper, and as I have said hundreds of times, you must have bulk for strength, and in the limited spaces where we are expected to place these bridges, the least gain in bulk is an advantage, and adds greatly to the strength, and can be best obtained by a properly constructed saddle.

A properly constructed saddle does not consist in swaging a piece of platinum on an accurate die, and expect that to fit as it should, but after it is made on an accurate die, and soldered with platinum solder to the caps, it should be placed in the mouth, and with a strong burnisher should be pressed hard against the tissues of varying densities, and you will notice that at certain points the saddle will yield sometimes one-sixteenth of an inch, as it is pressed hard against a soft spot in the gum tissues. This soft spot in the tissue would have been an easy starting-point for food to work its way under the saddle, which it will almost invariably do if the saddle is not fitted to the gum tissue itself. You need have no fear of the tissues being absorbed under a properly constructed saddle; in fact, the tendency is for the gum to grow up to and cover tightly the margin of the saddle.

Another argument in favor of porcelain bridges: As a rule, a mouth which needs a bridge needs it because the owner has been careless and uncleanly, and we have no assurance but what he will keep up this bad habit, and if he does, a porcelain bridge will be much more cleanly than a gold one, or than his own teeth will be, but as the soft tissues take to porcelain more kindly than to any other material that is to lie in continual contact with them, we have placed a material here which in itself is not an irritant, and if properly constructed this bridge will be cleaner than the natural teeth were in that same filthy mouth, and if the patient changes that bad habit there is no material which will respond and become so perfectly sweet as porcelain.

Of course, nothing but platinum solder should be used, and to properly handle this apparently stubborn solder it is almost an absolute necessity to use the nitrous oxide blow-pipe.

As Dr. Goslee says, and if you reason it out you will see that this bridge should only be set with gutta percha, and under no circumstances with cement, for if cement is used it will be quite impossible to prevent it from getting under the saddle, and practically making a cement saddle porous and foul, instead of the cleanly platinum and porcelain one.

If there is any one thing more than another that has made my porcelain bridgework a success it has been in my unusual care in grinding the set bridge to a proper occlusion. The same high point which on a gold bridge might not weaken it, would be absolutely

fatal to a porcelain bridge, and if these high points are discovered by the use of articulating paper and properly relieved, one of the greatest elements of weakness and cause of failure will be eliminated. Do not lightly disregard this suggestion, but attend to the occlusion as carefully as you can imagine I mean, and you will be amply repaid, and your patients given a comfort they will appreciate.

Do not put off another day your intention to take up this work, for you will have to learn it some time, and remember the description, or process, will never be so perfected but what you will have to learn by practical experience how to make it. You can be told how to do it, but you must do it yourself in order to attain success.

I hope Dr. Goslee's remarks, and mine, will do something toward instilling a new enthusiasm in you, and if you have had failures with porcelain bridges built on different lines from what we have suggested, do not be discouraged or condemn the work, but learn to construct it properly, and you will be as enthusiastic as we other "cranks."

DR. J. E. NYMAN, Chicago:

There is nothing that can be said in adverse criticism of the paper, and no necessity of saying anything in the way of emphasis, and yet anything that comes from the doctor's pen can not be dismissed with scant perfunctory discussion. It is worthy of more than that. The criticisms that have been directed against the application of porcelain have been mainly directed against the application of it in bridge work, possibly because of the fact that there have been more failures in porcelain bridgework than in porcelain crown work.

Ever since the universe began there has never been an effect without a cause, and an error will always be found to be the cause of the failure. Don't imagine that any of you who have attempted porcelain bridgework without due study of the skill involved, or without taking time to perfect yourselves in the necessary technique, and have thereby met with some sickening failures that have disgusted you with the method—don't any of you imagine that those of us who practice and advocate porcelain bridgework have not had similar sickening failures ourselves, but for some reason or another we have been gifted with the trait of patient, persistent curiosity, we will say, to find out the cause of all these things. While we have torn out the porcelain bridges just as disgustedly and as quickly as you would

have done, we have not thrown them in the scrap heap never to be looked at again, but we have carefully studied our work, and finally we have learned how to eliminate certain errors, and prevent failures. And, gentlemen, I think I speak truly when I say that of the bridgework that is constructed at the present time by Drs. Taggart, Goslee Schwartz and myself, as well as many others, porcelain bridgework constitutes a larger percentage than ever before, because we have learned by experience how to avoid certain errors of judgment and of construction. Some dentists attempt to apply porcelain bridges in cases where the general construction of the work to be done should warn them not to attempt it; or they make some error in the general mechanical plan of construction which experience or knowledge of mechanics should lead them to avoid. Perhaps their general construction of the case is good and well planned and they may make some error of judgment in regard to some specific detail of construction. It is only by study and experience that we can learn to avoid these difficulties or to overcome them, but, gentlemen, every one of them can be overcome.

Much has been said for and against saddles. I have used many saddles myself, and I have seen many others about which you could detect no pathological condition whatever after being in the mouth for years. Yet, again, in saddles that I have constructed before I learned what errors to avoid, I have found many cases in which pathological conditions did develop, but there was always a cause for it, and I think it can be definitely stated that a saddle that does not permanently interfere with the blood circulation through the tissues will not induce pathological conditions about it.

In regard to the elasticity of gutta percha to relieve, in a measure, the bridge from mechanical shock during mastication, I can not feel that any dependence can be placed upon it. I think the elasticity which there is in a compressed film of gutta percha is practically a negligible quantity, and at any rate it does not compare at all to the elasticity which is inherent in the pericemental membrane itself, which you know is elastic, as every tooth yields slightly under pressure, and I think that does more to relieve the bridge from mechanical shock than the interposition of a gutta percha film, but it is a great comfort to have a bridge set with gutta percha when some unforeseen accident happens. You can so easily remove it, and repair it, whereas

an accident to a cemented bridge means the practical destruction of it, to say nothing of the danger to the roots.

Another word in regard to fusing porcelain bridges. I should advise all the gentlemen to be very careful not to fully fuse the mass of porcelain which is first put on the bridge and carved up, because fusion of the second mass will over-fuse the first mass. There is no question at all but what the fusing of porcelain is a chemical process as well as a physical process, and there is no question at all but that the chemical process goes on even after what we term fusion is completed, providing the proper conditions regarding the thermal situation are maintained. I made some experiments in that line, and I will show the specimens tomorrow morning. I took two masses of porcelain and carved them as nearly as possible into two identical blocks. They were both put into the furnace, and carried to the point of a biscuit. They came out with absolutely no suspicion of glaze to them. Then one piece was put into the furnace and carried up to the same point time and time again, and examined after each heating to see what the result was. Each time a control piece was put in there, so that I was sure I had not carried my furnace above the "biscuit" point. With the result that at the end of seven fusings I had one of the most beautiful pieces of porcelain I ever succeeded in fusing in my life. What does that demonstrate? To me it demonstrates that to a large extent "heat units" are factors in this fusing, and "heat units" are factors of importance in chemical processes rather than those that are physical. That is a demonstration that the chemical processes that were instituted at the time the furnace was carried up to the point sufficient to biscuit it, were carried on when it had been subjected to the same amount of heat subsequently.

I am quite confident that we have all been fusing our porcelains too quickly. You can obtain the same result by prolonging the time of the exposure, and cutting down the intensity. We have been "broiling" our porcelain instead of "baking" it. I feel that porcelain bridgework is to be a permanent process because it has passed through such a trying period of failures and emerged triumphantly. I beg of you to equip yourselves so that you may go on with this work, which produces such artistic results, and results that are so splendid from a sanitary point of view. You will have to. There are many

in this audience now, no doubt, who for years have been deaf to all pleas of this kind, and yet who have been forced at times by their patients to take up this work, and I beg of you to prepare yourselves so that these times may be opportunities instead of embarrassments to you. (Applause.)

DR. O. A. CHAPPELLE, Elgin:

I agree thoroughly in the requirements of porcelain bridges stated in the paper, especially in two respects. In order to be successful they must have a bulk of material. Of quite as much importance also is occlusal relation. This must be favorable, and is a hard point to make favorable. I believe that deep sulci and elevated cusps should be avoided as much as possible in order to prevent any lateral strain. Again, he has said that porcelain is contra-indicated in direct proportion to the number of teeth. I believe that, too. I believe our "swing ons" are the most successful things in porcelain work that we do—a single swing on tooth, and the chances of failure increase, especially in fixed bridges, just in proportion to the number of teeth we add to them.

Of course, we make failures. I think I have made more than most people, as I began that work nearly fifteen years ago. I bridged everything with porcelain. I couldn't see any good in gold, or gold and porcelain combinations. I have made swing ons, and from that up to fourteen teeth in porcelain of all shapes and sizes, and have replaced most of them. There are a few that I have not replaced, but I do not understand just why that is the case.

One of the requirements of good construction, as has also been mentioned by the essayist, is a high reinforced saddle. It is a necessity. It is not hygienic, but if we use that method of bridge we must use a saddle, and it must be heavily reinforced. The edge of the lingual surface must be turned up and strongly reinforced in order to prevent the cusps being broken down. Again, the trusses must be low down in the mouth, allowing the bulk of the porcelain to be above them, and they must be very heavy. Again, platinum solder, I consider, must always be used. It should be fused with a blow-pipe, and so that you can scarcely tell where the solder begins or where the platinum ends. That is one of the great causes of failure, as very few dentists have satisfactorily soldered those joints.

Another thing is in regard to the grade of the body, the whole operation being of one body and not of a body and enamel. That is a eplendid point and a valuable one, and, as Dr. Nyman has stated, and it corresponds with my experience, in bringing it up to a biscuit several times you get the same effect of glazing and a better average quality of porcelain. Setting with gutta percha must always be the rule for the reason that it is necessary to very frequently take these bridges off and repair them.

I do not mean by what I have said to discourage the use entirely of porcelain bridges. I make porcelain bridges, but I am very much more conservative than I was ten years ago. I think, however, from my conservatism that I am doing a great deal better work for my patients. (Applause.)

DR. GEO. W. WHITFIELD, of Evanston :

Mr. President, I have but a very few words that I wish to add to this very interesting and instructive paper. Dr. Goslee spoke of the danger of the cement getting under the saddle of the bridge. That may occur, no matter whether you make your bridge of porcelain or of gold. I have had to take off a number of bridges on that account. One day, in licking a postage stamp, I thought if my bridge was covered with gum, after the cement had hardened the gum would dissolve from underneath and the cement would not stick. Since that time I have covered all the portions of bridges where I did not wish the cement to adhere, with gum acacia dissolved in water, and a little oil of cassia mixed with it to prevent from spoiling. Since adopting that system I have never had trouble with cement adhering to a crown or bridge. (Applause.)

DR. J. H. PROTHERO, of Chicago :

I am not prepared to believe that porcelain should be biscuited the first time and gradually glazed by successive bakings at the same limit of temperature. He says he can prove it by demonstration which he will show tomorrow. I am very much interested in seeing the specimens that he will exhibit then. I can not prove it to the contrary, but I have that feeling within me that we should carry the first baking further than he recommends in order to produce more complete shrinkage. There will be less requirement for the case being introduced into the furnace again.

Dr. Nyman says that he thinks the fusing of porcelain is a chemical change. I am not prepared to believe that. I believe it is simply a melting of the feldspar in the body and that no chemical action occurs.

A friend of mine related an incident yesterday which occurred to him in practice, and which might occur to any of us if we had a case of absent-mindedness. He has a McBryer furnace and he has recently had it re-wound. It requires from half to three-quarters of an hour to bring the case from the biscuit stage up to the glazing point. He started the furnace, and some patient came in and his time was occupied. He forgot the case and it remained in the furnace about five hours. When he opened it it was in prime condition. It was simply nicely glazed and nothing more. The heat was just sufficient to bring about that glazed condition and not carry it beyond that. I believe the increment of heat present in most furnaces when the full current is continued is greater than that necessary to produce an even glaze. When you reach the fusing point of the S. S. White or Brewster body, if you do not stop just at that point the heat increases. If we could control the furnace we could introduce a case into the furnace a number of times after having glazed it the first time without having it filled with pits or holes. (Applause.)

DR. J. E. NYMAN, of Chicago:

I do not care to bring on a general discussion over a point somewhat outside the topic of the paper, but I want to state this, that I can prove all I have said about my experiments. I did not say it was entirely a chemical process. I said it was a chemical as well as a physical process. You can not determine the proportion or the composition of any porcelain after it has been fully fused, by any method of analysis. The only way you can arrive at the composition of porcelain is by synthetic experiment. You can not recover any one of the ingredients that go into the porcelain mass by any analytical experiment or investigation.

I recently had occasion to read a paper on this subject in New York, which will be published in the *Dental Cosmos*. In that paper I have gone into this question of fusing porcelain, and I think after Dr. Prothero has read that he will have a little different view in regard to the fusing of the porcelain.

DR. C. E. BENTLEY, of Chicago:

What evidence have you that it is a chemical process, and if it is a chemical process, what are the chemical constituents of porcelain?

DR. J. E. NYMAN:

You can not determine that. It has been tried.

DR. CROUSE:

Why can you not analyze the constituents of porcelain after it has been baked?

DR. NYMAN:

Because a great many of the constituents lose their identity.

DR. BENTLEY:

I want the gentleman to go on record in this matter. He has made the assertion that the fusing of porcelain is a chemical and physical process. He has given us ample reason for the physical process, but has given us no evidence of its chemical process. I now ask him to give us what evidence he can as to the chemical conditions incident to the fusing of porcelain.

DR. J. E. NYMAN, of Chicago:

I would like to refer the gentleman to any text-book on chemistry or any recognized text-book on ceramics. I can not take the time here and now to quote the chapters to him. I have studied fusing, and investigated, and I have made no thoughtless statements in this matter simply to bring on a discussion. For a long time I felt that the fusing of porcelain was a physical process, but I was forced to change my belief, and I am prepared to repeat my experiments and make some new ones that have suggested themselves to me, and report to this society a year from now in a paper on the subject.

DR. GOSLEE, in closing the discussion, said:

Mr. President, I purposely refrained from entering into a discussion of any of the details of this subject because I knew I would get Bentley and Nyman together if I did, and because I was considering only principles. In closing the discussion, however, I want to refer to the controversy between the two gentlemen whose names have been mentioned with regard to whether the fusing of porcelain is a chemical or a physical process. Like Dr. Nyman, I was for-

merly of the opinion that it was purely physical. I am of the opinion at the present time, however, that it is both chemical and physical, believing that there is a chemical process involved for this reason: We have certain constituent elements in the compound before we fuse it. When we have fused that compound we have an entirely different product, which, if we were to pulverize again, we could not separate or use in a like manner. Therefore, I believe it will be found that there is some definite chemical process involved in the fusing of these compounds.

Now, with regard to the fusing of the body to the so-called "biscuit" bake, I believe we should never over-fuse porcelain, but in arriving at what we have designated as the "biscuit" bake in the fusing of porcelain both Nyman and myself are of the firm opinion that this bake should be carried to the point where almost complete shrinkage shall have taken place. I think Dr. Prothero misunderstood Dr. Nyman when he said he stopped before that took place.

Dr. Chapelle said that it is desirable to mount porcelain bridges with gutta percha because it often becomes necessary to remove them. While it is a nice thing to feel that you can take any bridge off in the event of necessity, still, in my experience, I have not found it necessary to remove a porcelain bridge any oftener than any other kind of a bridge.

Just a word now in regard to saddles. If the saddle is well adapted and does not impinge upon the tissues to an extent which would cause it to interfere with the capillary circulation, and if its edges are not sharp enough to cause irritation and hypertrophy, I can not see that you need expect any pathological conditions to result. As to the hygienic properties of the saddle (as stated in the paper) when it is so adapted it is a more hygienic type of construction than the porcelain-faced dummy such as is used in method of constructing ordinary gold bridges. Dr. Nyman and others have told me that they have had patients for whom they had constructed porcelain bridges, and who at the same time wore bridges of the old type of construction, and that they had been requested to remove the old ones and put porcelain bridges in their places because the latter felt and tasted better than the others. Dr. Taggart and myself have had similar experiences, and therefore I am convinced that if our adaptation is good we need not have any pathological conditions

there at all. If we do not err in our application we need have no fear of its success.

THE ODONTOLOGICAL SOCIETY OF CHICAGO.

A regular meeting was held April 11, 1905, with the President, Dr. J. H. Woolley, in the chair.

DR. JOSEPH W. WASSALL

Read a paper on "Oral Hygiene."

DISCUSSION.

DR. TRUMAN W. BROPHY:

Mr. President, I don't know whether I can get my thoughts concentrated on all the things in this paper, but the question of hygiene or prophylaxis is the most important one today under the consideration of men who have to do with the treatment of disease. I think it is safe to say that we have had occasion to see that the mouth is the greatest center of infection, and if we can succeed in making it more nearly aseptic we will have accomplished a great deal in the prevention of disease. I have often wondered why those who have bestowed so much thought on the subject of preventive medicine in the years gone by have given so little thought to the septic state of the oral cavity. To treat diseases of the stomach or of the nervous system or any disease that is attended by lowering of the vitality of the patient regardless of the condition of the mouth, is, in my judgment, bad practice. It is a lack of judgment or care on the part of the medical adviser regarding the best interests of his patient.

What I am about to say is not exactly in line with the subject, but I received a letter about ten days ago from the president of one of the large match factories in this country, in which he asked me this question and wished to have an answer: "Have the officers of a match factory the right to decide where a man or woman shall go for treatment of the maxillary bones in case of phosphorus necrosis, and have we the right to determine whether our employes shall go to any physician or to one whom we have selected and whom we know is eminently qualified to treat them?"

It was too much of a question for me without some consultation;

consequently I asked Dr. Bevan about it. He is, as you know, interested in the Diamond Match Company, and has written extensively on phosphorus poisoning. He told me that the company had the right to place their employes in the hands of a competent physician, one whom they might select that was qualified to treat them. I will therefore answer the letter accordingly.

Before I leave this question of phosphorus poisoning, which is a very important one to us, I wish to say that with the modern methods of managing match factories, owing to the improvements in the process of dipping, phosphorus necrosis rarely occurs in factories where they have adopted a systematic plan by which ventilation is made as nearly perfect as possible. In most factories in our country, or in the larger ones, they will not employ any one unless he goes to the dentist assigned. The Diamond Match Company pays a dentist five thousand dollars a year to examine the teeth of all their employes, and, in fact, before they become employes of the establishment they must be carefully examined as to the membranes of the mouth and teeth. No one is employed whose mouth or teeth are in an unhealthy condition. Every tooth must be put in perfect order and they must produce a certificate from this dentist to that effect. Then they may take a place in the factory, and every six months they must go back to that dentist and have their teeth carefully examined and get another certificate to the effect that their teeth are in good order, otherwise they will be dismissed. In that way, and with a perfect system of ventilation by means of a blast of air carrying out the fumes of the phosphorus, they seldom get phosphorus poisoning. The company was formerly made to pay enormous sums of money in damages to those who were affected in that way. This may be aside from the paper, but it is pertinent to the subject of oral hygiene, and it is a very important matter. I have had a number of these patients, and their conditions are difficult to treat.

The subject of the paper and the importance of oral hygiene has been discussed from time to time, but it will never be given too much attention. It is more important than anything else the dentist has to deal with, and I suppose it is the same with the physician. I often think of a remark Dr. Allport made one time at a meeting in Boston when this question of dental prophylaxis was under consid-

eration. It was to this effect, that while the average dentist seemed to undervalue his advice to his patient bearing on the subject of oral hygiene, and who, as a rule, gave his advice without a fee, yet he felt that such advice given by men who thoroughly understood the subject was far more valuable to the patient than any amount of dental work they might do in the way of inserting fillings, and so forth. Advice is what benefits the patient far more than dental operations. We all know that if we could take an infant and keep his mouth clean and induce him to form the same habit as he grows older and keep it up through life and teach his companions to do the same, we would have a splendid community from a dental standpoint. They should be taught to use some aseptic mouth solution to keep the mucous membrane clean and also remove this viscid mucous that we find so frequently.

The ideas expressed by Dr. Wassall are, I think, very admirable. I have tried to instill such ideas into my patients all my dental life. Scrubbing of the teeth as usually done is of little value because the prominent parts of the teeth will be kept clean by the action of the lips and tongue, whereas, the surfaces in contact are those that break down earlier, not by reason of the tooth structure being less durable or less capable of resisting destruction, but because the teeth are not kept clean in those parts where it is most necessary. By downward brushing of the upper teeth and upward brushing of the lower teeth we succeed in clearing away the accumulation around the teeth and at such points as are in close contact with the brush, and besides this, it benefits the gums. We often see the left cuspid tooth exposed up along its neck for a considerable distance since most people are right-handed, and while scouring the teeth they are apt to get the gum tissue worn away at the point where it receives the greatest force of the brush because it is a little more prominent there than elsewhere. The brushing process has been advocated as very valuable in preserving the surfaces of the teeth from becoming carious.

I think if we could only instill into the minds of everybody the importance of this measure we will have accomplished a greater work than has been accomplished in manipulative dentistry. Important as it is to arrest diseases of the teeth when they are once established,

far more important is it to prevent the inception of dental caries by resorting to earlier prophylactic measures.

DR. L. S. TENNEY:

I feel that Dr. Wassall has done a greater work than any of us in this line of oral hygiene, and if there is any one thing in which dentists fail in their duty it is in the instruction of their patients as to the care of their teeth. I do not believe that more than 1 per cent of the dentists in this country give as much attention as they should to this matter. Most of us feel, and I do myself, that if we recommend a certain tooth powder and tell our patients to brush their teeth up and down three times a day, that we have done the whole extent of our duty, but I know that is not the case. We become very much discouraged because it seems almost impossible to get the co-operation of the patients. No matter how hard we try to instill these things into their minds they do not seem to appreciate our efforts.

In cases where I have had young people under my care for some little time I have made systematic efforts to teach them how to care for their teeth, but I have always met with such indifferent results that I have become discouraged. However, no one realizes more than I the necessity of these things and the benefit to be derived from such work at Dr. Wassall is doing.

DR. J. G. REID:

If there were only some means that could be adopted by which we could impress our ideas upon the minds of the patients sufficiently to make them do what we wish them to do, we would certainly be much better rewarded. I believe in the old biblical quotation, that the saving of one soul out of a hundred is something. If you have made one person out of one hundred follow your advice regarding prophylactic measures you have accomplished something. Seed falls by the wayside many times, but by continuous effort on the part of the dentist in instructing his patients in the art of prophylaxis, it will, in a small percentage of cases anyway, take root.

I have resorted to all sorts of methods in order to get patients to take care of their teeth. I have tried to shame them, to talk to them sensibly and logically, and to advise them to take measures looking to the preservation of their teeth, but in the majority of

cases it has been apparently a hopeless effort. I had, for instance, a little girl in my office today who came to me about six weeks ago to have some dental work done, and when she came into the office I examined her teeth. She was about fourteen years old, and her mouth was in such a bad condition that it was enough to turn the stomach of a dentist. I said to her: "My little girl, I can not do anything for you; your breath is so bad that I simply do not want to stand around you." I told her aunt, who was with her, the same, and of course they felt hurt that I should talk in that way. I thought that it was better to do this, even if they should go away angry, and I said to her: "I simply can not do anything for you until you have gone home and taken care of your teeth and gotten them clean, so that I can examine them properly before I undertake to do any work." I told her that if she desired to do that I would be glad to give her my services, and that unless she did we would consider the engagement at an end. Well now, that is pretty strong language to adopt toward a stranger of whom you know nothing, but I made up my mind that I did not care what the effect was, and that if it drove them away I couldn't help it. Well, the aunt said to the little girl: "You heard what the doctor has told you, and that is what I have told you, that you ought to take care of your teeth and you wouldn't do it." They went away, and as they were leaving the aunt said: "When will you see her again?" I told her that I would see her in a week from that day, and she said: "All right." I gave her instructions as to what she should do in the meantime. The little girl came back with her aunt at the appointed hour, and to my great surprise I found her mouth in very excellent condition, and the little girl herself said to me: "Doctor, I shall do this all my life. You don't know how much I appreciate what you have done for me by telling me what to do. My mouth feels so much better." I thought that if I had accomplished that much it was worth while, and I felt pleased with the result. If we knew how to impress our patients with the necessity of taking care of their teeth we could do a good work. I try to do that as best I can, and have met with varied success.

I think the suggestion of Dr. Wassall probably is ideal in its way, and we can not advise our patients too strongly on the question of prophylaxis.

DR. J. E. HINKINS:

The question of oral hygiene is one of vital importance to us all, and I think we should all try to do our best along the lines of teaching prophylaxis. We do not receive encouragement from our patients, and, as Dr. Reid and Dr. Tenney has said, we fail to impress them with the importance of brushing the teeth.

I remember when I first joined this society they used to advise us to brush our teeth this way, and to brush them with all the concoctions we could get hold of. My observation has been that many of my patients brush too much across the teeth and use too many preparations. I believe if you take a stiff brush and load it with oxydizing agents, such as peroxide and those things, that you destroy the enamel by mechanical abrasion and chemical action. It is not unusual to see a patient come into the office who has almost cut furrows across the teeth by using too stiff tooth brushes. If any of you will take the enamel of a tooth and chip it off, and try to fuse it, you will find it is one of the hardest fusing bodies that you have ever encountered. The high fusing materials we get from the dental depots are not to be compared with it. These chemical concoctions for brushing the teeth, such as antiseptic solutions and mouth washes, are, to my mind, one of the greatest detriments we have. I would much prefer my patients to brush their teeth with a solution of bicarbonate of soda, or something of that kind, than lots of the mouth washes, such as peroxide, or some of the other antiseptic mouth washes which are highly recommended.

The question of getting the patient to brush the teeth in the right manner is a very difficult one, as well as getting the patient to massage the gums. All we can expect to do is to use our best efforts, but for the last five years I have almost invariably condemned the use of peroxide of hydrogen and things of that kind, which have become generally used by people for brushing their teeth, because I have had so much trouble caused by using these things.

As Dr. Brophy has said, there are a great many people who always begin to brush from one side, and the gums of the most prominent teeth are worn away from them, and for that reason I do not believe in using so stiff a brush as many people do. I always advise the patient to immerse the brush in some water before beginning to brush the teeth.

DR. L. L. DAVIS:

We all recognize the value of this subject of oral hygiene, and we certainly at various times have learned considerable from Dr. Wassall in regard to it. I think he was probably among the first I ever heard speak of the vertical motion as opposed to the transverse motion in cleaning the teeth.

While I recognize that it is a fact that we do not always have the co-operation of all the patients that we treat, yet I sometimes think that perhaps the dentists themselves are to blame for not mentioning the matter often enough. When a new patient comes into our office, after we have examined the teeth and found certain conditions, the chances are that we make inquiries and tell them what to do, but with our old patients, who are coming in from time to time, we forget to mention these things. It is only by constant reiteration, as Dr. Reid and others have said, that we can get anything like proper results. If we could only get the younger generation started in the right direction by impressing them in some such manner as Dr. Reid suggested, or in some other tactful way, the chances are that the future would show marked results from our teachings. I have only recently seen cases that have been under the control of some very good dentists in Chicago, who would probably say just the same as any of us might have said, and yet the patient has said: "Why, doctor, I was never told to do this." It is not because the dentist did not recognize the fact that the patient needed instruction, but probably the patient had been a long time under his care, and the dentist may have forgotten that the patient did not know what was necessary. Some good can certainly be accomplished by reiteration of this advice to our patients.

DR. E. A. ROYCE:

This subject is a very important one, and it has been very well discussed. There are some points in which I do not exactly agree with the essayist, as I think that the lack of mouth prophylaxis is quite often the fault of the dentist. One lady called upon me and said that she did not want to insult me, but she would consider it the greatest favor if I would either clean her teeth or tell her where she could get it done. I found that she had some very beautiful fillings in her mouth, and I remarked that from the looks of her mouth that the dentist should have cleaned her teeth at the time

he inserted the fillings. She said that she went to a dentist in Hot Springs, but he told her that he did not clean teeth. I said: "Madam, you are mistaken. You did not go to a dentist; you went to a tooth filler." I think that sentiment is prevalent among dentists to an altogether too large extent.

The question of brushing the teeth has been presented very ably by Dr. Wassall. If you find a patient who is continually brushing his teeth transversely you will find a furrow at the neck of the teeth, occasioned by cross brushing, and for this reason I began advising my patients to brush their teeth the other way. In cleansing the teeth I prefer a real good dentifrice. My theory is that teeth should be polished very much as jewelry is polished; that is, with a dry brush and a dentifrice. If the teeth are brushed from the gums downward very little of the dentifrice is washed into the gums.

There is only one way in which I can bring people to appreciate the value of cleanliness in the mouth, and that is to tell them that they would not sit down at a table to eat with knives and forks that were one-tenth as dirty as their own teeth are, and still they have their teeth in their mouth all the time. That comes the nearest of anything I have found of bringing them to their senses.

I think we owe our thanks to Dr. Wassall for the work he has done, for surely he has given us some new and original ideas on the subject, and we need to have ideas and to have them forcibly impressed upon us so that we may give a slight reflection of them to our patients.

DR. C. N. JOHNSON:

It has already been intimated several times that we could not have too many papers or too much discussion of this subject, and I am thoroughly in accord with that sentiment.

I think that this is one of the most discouraging features of our practice. Some time ago a gentleman asked me what constituted the greatest amount of my work at the chair. I was forced to confess that I put in most of my time trying to get the teeth ready to fill, and I really believe that most of our work consists in cleaning the teeth and getting them in shape to perform operations upon them. I am sometimes very much discouraged at the lack of results obtained, but compared with the results that were obtained twenty years ago I feel some degree of encouragement.

The general character of the teeth of my patients today is very much improved over that of my earlier experience, and I think if we work as a profession along these lines, trying to impress upon our patients the necessity of properly caring for the teeth themselves, and then giving them instructions as to how it should be done, that we shall accomplish a great deal of good. My chief difficulty has been to get people who seem to have average intelligence about other things to understand how to brush their teeth the right way. You may impress upon patients the necessity of taking care of their teeth, and they will go home with the firm intention of following your instructions, but will come to you at the next session with evidence of having brushed too much at some places in the mouth, while other spots have not been touched at all.

A short time ago a lady came to me with some cavities that needed attention, which would not have been the case had the teeth received proper care. She said that she brushed her teeth three or four times a day. I handed her a glass and asked her to look at a certain tooth, and showed her that her brush had never reached a particular spot on that tooth. She was compelled to admit that it probably had not. I said: "That is why the tooth decayed, and I should not be obliged to put in a filling at all if your brush had reached there."

Now, your patients are not all alike. Each individual case requires attention and study, but I believe it to be our duty to urge our patients in season and out of season to take care of their teeth.

I am very glad Dr. Wassall read this paper to us tonight, and I hope we may all profit by the suggestions that he has given us.

DR. J. H. WOOLLEY:

When Dr. Wassall was invited to write a paper he said: "I will give you 'Inlays' for my subject." In his extreme modesty he was afraid he would bore the society by reading another paper on the subject that he had handled before. The subject of Oral Hygiene was suggested to him, and he kindly agreed to give us a paper on that subject. I was very glad to hear from him, because I do think we can not wear out this subject, as we can the teeth, by rubbing them the wrong way.

I do not like the word "discouragement," or to hear a dentist say that he is discouraged by the poor results of his labor. Evolu-

tion is a slow process at best, and as applied to dentistry it is making marked progress every decade, and I have found that people as a rule are paying more attention to the cleanliness of their teeth than was formerly the case. The brush is all right, but that alone is not enough. The gums need massaging. This process is strengthening and revivifying. Even in the management of the tooth brush the food can not all be removed. It has just occurred to me that if the tooth brushes were made at right angles to the handle that it would force the patient to brush his teeth up and down, and this is very much desired.

DR. WASSALL, in closing the discussion, said:

I have been very much instructed by what I have heard from you tonight. There should be no such thing as discouragement, as Dr. Woolley said. If the patients do not carry out our instructions it is our business to see that they do. It is very easy for one of us individually to grow careless in the care of our own teeth. No matter how well a patient is doing for a year, or two years, in the care of his mouth, he will come back to you, perhaps, after a trip to Europe, or after an illness, during which time he has grown careless or has been unable to take proper care of his mouth, and a few words about clean teeth will put him on the right track again. Your patient's mouth is in your care. There is no occasion to be discouraged by any condition you find. Of course, there is a great difference in people, and some people do not want to keep their teeth clean for the same reason that they do not keep shaved or take baths.

When a patient comes to you the first thing that should be done before an examination for caries or disease is made is to examine the condition of the teeth as to cleanliness, and the gums as to whether they are spongy or likely to bleed, and you should make inquiries at once as to how they take care of their teeth and find out whether they have deviated from your instructions in the past. It is a very easy matter to get them on the right track again. If they are brushing cross-wise, or using the wrong dentifrice, or their tooth brush has become too soft, call their attention to the fact. Tell them that it is not necessary to brush their teeth, but to brush their gums. You know perfectly well that if you brush the gums until they are hard and clean and healthy that the teeth will be all right.

Dr. Johnson spoke of examining a patient's mouth and finding

that certain places had not been brushed. It is a very common error with people who are fastidious with regard to personal cleanliness to find that there may be one spot that they have not brushed, and it is only necessary to do as Dr. Johnson did, and that is to take a mirror and show them the spot. Where a tooth is perfectly clean there is no caries. Tell the mothers of the little children that the children will never have decayed teeth if their teeth are kept perfectly clean. Of course, the teeth can not be kept absolutely clean, but the nearer you can approach that condition the freer they will be from caries.

I have entirely abandoned the prescribing of any mouth washes or dentifrices of any kind. I find by observation and by personal experience that the brush loaded with cold, fresh water applied to the gums long enough at a time will absolutely cleanse a healthy mouth. I pre-suppose that there are no deposits there. Cold water, with a fairly hard brush, used for a sufficient length of time on the gums will keep every mouth perfectly free. Every one of you men, when you go home tonight, try cold water for once, brushing your gums in a vertical direction. Reload the brush constantly in cold water and keep it up for three minutes until you can feel with your tongue that there is nothing of a gelatinous nature anywhere adhering to the necks of the teeth. After you have brushed for a little while, if you can feel any spot that is a little bit unclean, keep on brushing. You can not have diseased gums if you will use cold water on those surfaces, together with a fairly hard brush. If the gums should bleed keep right on brushing until the blood ceases to flow. That spot has been neglected, and you should keep right on brushing until it stops bleeding. In two or three days you will not be able to get any blood from that spot. That will cure any case of pyorrhea, where deposits have been removed and where the tooth is not so loose that you can extract it with your finger. What were those diseases that cattle had fifteen years ago when we had to have state legislatures prohibit slop-fed cattle? They resulted from nothing more or less than the non-use of the teeth.

Gentlemen, this is a subject that we should always keep in mind when we first see the patient. The mouth should first be thoroughly cleansed; every bit of deposit should be removed and the patient instructed how to keep his mouth clean. He comes again, and if he

has made his gums sore you can tell him to use a soft brush for two or three days until they get well. It will not be very long before you will be rewarded by having your patient come to you and tell you that he does not need to use a soft brush any longer. You will find that where they use a hard brush their mouths look very wholesome and clean and that their teeth are practically immune from decay and pyorrhea. I believe my patients have cleaner mouths, as a rule, than others, because I have been untiring in my efforts to get them on the right road. It is the greatest satisfaction I have in the practice of my profession when people come back to me after three or four months and I find their mouths clean and in good condition.

DR. TENNY:

How often do you advise brushing of the teeth?

DR. WASSALL:

I think it is foolish to tell people to brush their teeth three times a day. I think it is better for everyone to brush their mouths and gums before they retire and when they get up in the morning. There is not much food that accumulates during the day and it does not do any particular harm. Night and morning are the times that people should use the brush and should use it for at least three minutes. Anyone can tell whether the mouth feels clean or not, especially if it is not full of tooth powder. I advise against the use of any of these antiseptics because I do not believe that a healthy mouth needs them and I think the theory is wrong. If you do use an antiseptic it means that you are disinfecting something that is foul in the mouth that has not been removed. It is the same as finding a dead mouse in the closet and pouring some carbolic acid on it and leaving it there instead of taking a shovel and throwing it in the ash barrel. Don't leave anything in the mouth that needs disinfecting.

In regard to the margin of the gums that Dr. Woolley referred to, if you brush the gums in the manner I have described, there will not be anything under the free margins of the gums. It presses it out, and if you keep it up for a sufficient length of time you can not find anything around the margins of the gums.

DR. TENNY:

Did you speak of floss silk?

DR. WASSALL:

I don't preach floss silk any more. Sometimes you find a bad interproximal space that no man can keep clean and you will have to take care of it in an extraordinary way. I saw a little woman in my office today who was bothered with food collecting under her bridge. I found that there was an old root that had worked to the surface and the food lodged under that. I told her to let it go until fall when it will have worked nearer the surface and it can then be removed more easily. In the meantime I advised her to use a syringe to keep the space clean.

THE SOUTHERN WISCONSIN DENTAL ASSOCIATION,
RACINE, MAY, 1905.

DISCUSSION OF DR. BANZHAF'S PAPER ON "MANAGEMENT OF CHILDREN'S TEETH."

DR. H. N. JACKSON, Milwaukee:

Mr. President and Members of the Southern Wisconsin Dental Association.

It is unnecessary for me to enlarge upon the importance of this subject. We all know that the care of the teeth of children is of the utmost importance. We also know that the annoyance in attempting to take care of them in many cases is such that some dentists absolutely refuse to do it. I know of dentists in the city of Milwaukee who simply will not touch children's teeth at all.

Now, the subject of the diet the doctor has covered very well. He did not allude, and could not in a paper of that length, to the effect that diet has, through the constitution, on the teeth; the fact that children do not, in many instances, get enough of the lime salts, phosphates, to feed the bony structure and the teeth, to say nothing about the masticatory aspect. The husks of the grain, which contain these substances chiefly, are nowadays largely bolted from the cereals we use, and the children do not get enough of them. They should be fed graham bread and foods of that kind that will sustain the growth that is needed, and should be refused more than they are the highly prepared foods.

The doctor told us what filling materials to use—amalgam, gutta percha, cement, etc., and about the filling of the root canals. Now, in many of these cases we know the children are not hard to handle. Those are the cases we do not need so much advice about. It is the hard cases we have to contend with that I wish the doctor had told us more about. We do know that where it comes to thoroughly filling the root canals that it is impossible. It is a question whether these thorough measures—which we adopt if possible—do not sometimes defeat our purpose and prevent doing anything for the child at all. The parents themselves will not insist on having these things done properly, and so at the risk of letting the idea get abroad that I am careless in my practice I am frank to say that I have cases of that kind where there seems to be nothing else to do than to use—for instance in a pulpless, putrescent tooth—carbolic acid and iodine in equal parts and cover it up indefinitely with gutta percha. It seems that in many cases I have been unable to do anything else, and I can in no other way keep the tooth in the child's head because they will not have anything else done. I do not do this indiscriminately, but in some cases nothing else can be done as well as this. They simply will not have anything else done.

The doctor did not speak of Ames' oxyphosphate of copper cement. I find it most advantageous in filling teeth where you can not be as thorough as you wish. It will absolutely prohibit the caries in that tooth. I saw some yesterday that had been in the mouth for three years. It is true, it has washed out to a large extent, but there was a film of it left in the bottom of those cavities, and it is still doing service as far as keeping the tooth quiet and preventing further decay is concerned.

Speaking about the bad cases: Some dentists will say: "I don't believe in short cuts." I don't consider that a very good argument. Dr. Good has told us how he treats pyorrhea. We know that many of us will spend ten times the amount of time over the teeth that he does in an effort to cure pyorrhea, yet many of us wouldn't dare say we get the results he does. Now, of course, I don't believe in a dentist being careless in practice, but I do know a "short cut" will sometimes accomplish—especially in children—what you can not accomplish in a more thorough manner. The doctor did not mention nitrate of silver, which, of course, he knows all about. I find

it very advantageous indeed in the treating of sensitive cavities and in stopping the carious process.

With regard to what children can do themselves for their teeth: I have three little ones of my own—and they are all little ones. I tell my wife to see that the children brush their teeth when they go to bed with just as much regularity as they put on their night-gowns. It is not the fact that they brush their teeth so well, but it is getting into the habit of it. If they begin that way they will always do it. It will become a habit that will stay with them. That is the chief thing with regard to children beginning very early to use the brush, and taking pride in having a brush as mine do—and one is but two years old. I also find it rather amuses the youngsters to have a box of these thin rubber bands. They will play with those bands and use them in their teeth, back and forth. Of course, it must not be overdone, but I find that a very good way to reach between their teeth proximately, where otherwise they would not. I do not want to take up any more time except to report an anomaly in the youngest child of mine, two years old, who has a supernumerary upper lateral.

DR. WHITEFIELD, Evanston:

Mr. President, I have but one thought, and that is in regard to the mastication of the food. The doctor covered the ground well, but I wish to cite this fact: That in the old slavery times the field hands had much better teeth than the house servants, and it was noticed that when field hands were brought in and used in the house their teeth would soon begin to give out. You find that in the emigrants from abroad, especially the Swedes. When they come to this country they have beautiful teeth. They soon lose their teeth here; they go to pieces. It was also noticed that when house servants were put into the field, where they had coarse food and where they had to use their jaws, their teeth would soon improve in condition.

DR. FEDERSPIEL, Racine:

I wish to urge the necessity of the dentist watching the deciduous teeth when they are erupting from the gums and keeping them in the proper mesio-distal relation in order to have the proper occlusion. I do not believe in the old pernicious practice of leaving the teeth of the child until they have all erupted.

DR. WHITEFIELD:

When I find that the teeth are starting in the wrong direction I instruct the mothers that by a little manipulation of the fingers they can force those teeth into the proper alignment and save the child the necessity later on of having regulating appliances and the nervous strain of having that work done.

DR. B. C. CAMPBELL, Lake Geneva:

I believe we as dentists can not lay too much emphasis on our instructions to the parents, as well as the children, in regard to the matter of their diet. In this day and age, when so many of our little ones are dieting upon food-stuffs that are prepared, that are not only masticated but are said to be digested for us before we have them placed upon the table, we have every reason to expect that unless this is discouraged future generations will suffer evil results from it in losing that strength and vitality that comes to the teeth by mastication.

In regard to handling these bad cases Dr. Jackson has referred to, for instance the putrescent deciduous tooth, I would suggest—because I have used it in my own practice—that where you are unable to place a root filling such as was formerly deemed proper into these cases, if you would put in a dressing of oxpara or perhaps some of the other medicinal agents that contain formaldehyde you will have something that will act as a preservative, that is easily placed, and that will do away with so much fatigue that comes to the little patients with long sittings. Some might say that that was careless practice, as Dr. Jackson suggested. I not only practice that in many cases of deciduous teeth, but in some cases of first permanent molars. Not for permanent work, but I know that it will preserve that tooth, retain it in the mouth, give the patient the use of it, until he has arrived at an age when you can appeal to his reason, and are able to do a permanent piece of work by treating and filling the root as it should be done.

DR. C. F. RODOLF, Muscoda:

Dr. Campbell has spoken of appealing to the reasons of his young patients. It seems to me I can appeal to the reasons of my young patients better than to my old patients. I don't have any trouble with young children 3 to 6 years of age. If I can have them

by myself in the office I can do anything with them that I can do with an older patient.

DR. W. V. B. AMES, Chicago:

This matter of nitrate of silver has been slightly touched upon. I think it is one of the most interesting matters in connection with the subject. I want to tell what was brought to my notice by Dr. Eschelman of Tacoma, formerly of Chicago. A cement filling, oxyphosphate of zinc, placed upon a surface treated with nitrate of silver, will, for some reason—he doesn't attempt to account for it—last a great deal longer and be a great deal better mass than the same mass not having the peculiar effect it gets from this film of aluminate of silver. A great many of you no doubt have seen the effect of nitrate of silver upon a surface which has been infected to a very slight depth. That, you know, in time will become a polished black surface and further decay will never result. Now, if in deeper cavities we can make partial preparation and apply nitrate of silver, and have it last longer than otherwise, it is worth knowing.

Since oxyphosphate of copper was mentioned I want to say what came into my mind at the time Dr. Banzhaf was telling about removing decay from the pulp and applying a mixture of oil of cloves and oxide of zinc. In using oxyphosphate of copper that film of decay may be left over the pulp and it will be transformed to the oxyphosphate of copper and it will form an ideal cap over that pulp. The behavior of pulps beneath such a filling is often remarkable. The pulp may die under the oxyphosphate of copper filling and there is no evidence of the death of the pulp, barring the discoloration of the tooth. It will stain to the extent of the infection. In deciduous teeth it will stain to the extent of the root and the tissues over such tooth will be normal, while in the same mouth where the pulp has died under some other filling, there will be a violent abscess. I do not say that should be adopted as a short-cut method, but it has been seen time and again. There is no bad result from the tooth pulp under such a filling as there would be under oxyphosphate of zinc, for instance, or gutta percha.

DR. H. N. JACKSON, Milwaukee:

I want to corroborate what Dr. Ames has said on oxyphosphate of copper.

DR. H. L. BANZHAF, Milwaukee:

I intended to write a paper on the subjects that have been referred to when I began, and I am sure my experience is not unlike others; but my mind happened to be running along the line of food and food-stuffs, and it ran away with me.

Nitrate of silver has been referred to. As Dr. Ames has correctly stated, nitrate of silver can be very well used in superficial cavities. It has been my experience where nitrate of silver was used in deep cavities it was so violently irritating that it was apt to bring on hyperæmia of the pulp, very difficult to control. I have therefore abandoned the use of nitrate of silver, except in about 25 per cent solution in cases of children say perhaps three years old, and they come with very small cavities in the anterior teeth.

I have found the use of oxyphosphate of copper has given me very gratifying results. In the hurry of writing the paper I did not happen to think of it.

There are a great many things in this broad subject that might be spoken of, but I felt that twenty minutes was all that I was entitled to, and I cut it short. I thank you and the gentlemen who have been kind enough to discuss it.

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EDITORIAL.

NOMENCLATURE.

In the present issue of THE DENTAL REVIEW the subject is discussed by Dr. E. K. Wedelstaedt, and some of his contentions are well worth consideration. It is assuredly inconsistent to have such a confusion of terms as we see in our dental literature, and it should be the aim of every writer and speaker, of every editor and teacher, to harmonize and systematize our nomenclature at the earliest possible moment. And yet we must not forget that these things are matters of growth, and that with all of our present imperfection we are at least much in advance of a quarter of a century ago. The report of the Committee on Nomenclature of the World's Columbian Dental Congress in 1893 did a great deal for the cause and stimulated thought upon the subject. Following this the Institute of Dental Pedagogics appointed a committee which studied the matter very carefully and brought in a comprehensive and well considered report. But the profession has not availed itself of the suggestions made by these committees to the extent that would seem desirable. Teachers in our colleges have in many instances gone on using terms that were logically argued out of existence long ago. Many of our professors are not sufficiently alive to the importance of a systematic and uniform nomenclature, and by being slipshod themselves they foster this carelessness among their students. Dr. Wedelstaedt claims that dental editors should help to regulate these matters. Dental editors do, but it is perfectly wonderful how much of this regulating there is to do in the average copy that is sent in for publication. Editors sometimes get tired, and there is no worse drudgery than straightening out the phraseology of manuscript.

The question arises as to who shall be considered authority on nomenclature. It would seem that this should be an international matter instead of a national or sectional one, and there is hope that something may be accomplished by the International Dental Federation in its recently appointed committee on nomenclature. We must have a nomenclature that is simple and expressive, and it must not be too radical in its departure from the terms suggested by the committees that have already worked upon the subject. Common usage has much to do with molding the nomenclature of any subject, and certain terms will stick in spite of philologists who may argue against their appropriateness. "Pyorrhea" is one of these. This is a term that has been shown to be far from expressive of the condition it is used to describe, and yet it is certain to stay with us. The public has it and it can not be suppressed.

It is the same with "labial cavity," "occlusal cavity," etc., to which Dr. Wedelstaedt refers. While these may not be technically correct, we are never going to get our writers and speakers to go so far around the block as to invariably say "cavity in the labial surface," "cavity in the occlusal surface," etc. We should shorten our terminology as much as possible and custom will do this in spite of all our learned men. The term "labial cavity" is not ambiguous and can not be mistaken for any other kind of cavity. What we want mostly is the use of simple terms which can not be misunderstood, and then as Dr. Wedelstaedt says, we all want to use the same terms.

THE CHICAGO ODONTOGRAPHIC SOCIETY.

Last May the Chicago Dental Society and the Odontographic Society of Chicago united into one society to be called the Chicago-Odontographic Society. The first regular meeting was held in September and the attendance was 210. In October there were about 200 present, and the prospects are very favorable for a brilliant winter's work. It seems from the present outlook that it was a very wise move to combine the two societies. When a local society can bring out a monthly attendance of 200 it is evidence that there is some enthusiasm in the ranks. In fact dental society matters in Chicago never looked more promising than they do at present. The officers and committees of the new society are working enthusiastically to make this a memorable year, and already an excellent program is under way.

It is also hoped to inaugurate a series of clinics during the winter which will prove a most desirable feature if they can be carried out. The society meets the third Tuesday of the month at the Public Library building, corner of Michigan avenue and Randolph street, and it is hoped that dentists visiting Chicago will note the time and attend the meetings. They will be cordially welcome.

THE EDITOR'S DESK.

MY SUMMER VACATION.

(Continued from October DENTAL REVIEW.)

YELLOWSTONE PARK.

To give one an adequate impression of Yellowstone Park without a visit there is almost hopeless, and to attempt to describe it



"Yankee Jim's" Canyon.

in words is futile without spending hours of rapid-fire talk. The most I can do is to give a running comment on our trip and keep as far away from guide books as possible, using an illustration here and there to help fill out the impression. From Livingston we went

by train to Gardiner—about a two hours' run—where the stage coaches met us. This railroad ride down the canyon through which the Yellowstone River flows is very interesting. The scenery is fine and the yarns of the guide amusing. A noted character of the region, "Yankee Jim," after whom one of the finest canyons is named, lives in a cosy log cabin beside the track, and the guide tells the story that when Yankee Jim wants to replenish his larder he takes his spy glass and goes out of his cabin and locates a bear far up on the mountain side. He then takes careful (?) aim with his rifle and



Coach from Gardiner to Mammoth, Yellowstone Park.

shoots the bear. The mountain is so steep and the distance so great that by the time the bear rolls to the bottom the friction has tanned his hide and cooked the meat, ready for the intrepid hunter's service. Of course it would be sacrilege not to believe everything that is told you in the park, and really this bear story—fishy as it is—is not more wonderful than some of the things that nature spreads before your very eyes, and thus compels belief, on your way through the park.

At Gardiner there is a very attractive and unique station built of natural boulders and pine logs, and on our arrival a line of

fine coaches with sixhorse teams await us to convey us to the first stopping place in the park, Mammoth Hot Springs—five miles distant.

This gives us our initial taste of real stage coaching in the park, and brings us back to the blessed days before there were railroads, when travelers in the mountains of America and through the rural districts of England and France depended on this more ro-



Our Coach Party, Yellowstone Park.

mantic if less rapid means of locomotion. It was delightful, and my Indian girl must needs ride on top of the coach, and The Collector must stand on tip toes between the lower seats to make sure that she missed nothing along the route.

I have never had anything but a vague idea of how large Yellowstone Park was, and there may be others who would like to know

something definite about it. It is sixty-two miles long from north to south—we enter it from the north—fifty-four miles wide, and has an area of 3,312 square miles. It is mostly in Wyoming, only a small strip being in Montana and Idaho. John Muir, the noted mountaineer, writes of it: "Here are hills of sparkling crystals, hills of sulphur, hills of glass, hills of cinders and ashes, mountains of every style of architecture, icy or forested, mountains covered with honey-bloom sweet as Hymettus, mountains boiled soft like potatoes, and colored like a sunset sky."

Of course the geysers form a very important feature of the natural phenomena of the park. They are ready made fountains of steam and hot water, gushing from the earth at intervals more or less frequent and more or less regular according to the habit of the particular geyser. Some play every few minutes others at intervals of several days. When they play often they do not play so long. Some of them spout as high as 250 feet in the air while others are more modest and simply splutter and puff. All are interesting to behold and marvelous to study. Who knows what is going on down under the earth's crust to cause such a ceaseless boiling? What keeps up this incessant display of energy, this stupendous chemicalization? Will the fires never burn out, or is the heat generated by chemical action alone? If so how long are the original materials to last? Chemical action can not take place without destruction, and I am wondering how many ages nature has been running this immense crucible and how many ages she can keep up the energy? I have never heard a scientific explanation of the phenomena and am conscious that I may be asking some very foolish questions, but I would always rather ask a foolish question than not know. Let somebody rise up and answer and I will doff my hat to him.

We stay over night at Mammoth Hotel. Here the real business of seeing the park begins, but I can not stop to enumerate the various points of interest. The hotel is all bustle with going and coming guests. An orchestra is dispensing delightful music, and we soon forget that we have just traveled about 1,300 miles by train. At Mammoth are kept all the company's horses, and it is from here that the regular four-horse coaches which make the tour of the park start. The company owns about 800 horses and is constantly buying

more. The parties for the various coaches are made up the night before and the management aim to place congenial people in each coach. Our party, in addition to those who left Chicago together, consisted of The Trained Nurse, The Auburn Haired Girl—who never resented any allusion to her hair—The Twin Sisters,—except that one was several years older than the other—and a gentleman named Mr. Bonet. It is only typical of the general jollity and freedom of



Our Coach at Norris Basin, Yellowstone Park.

the crowd to state that we had not been long together before The Collector had named the latter gentleman "Little Red Riding Hood," and he entered heartily into the spirit of the joke and answered to the name throughout the trip.

Our driver's name was Jess, and he was an artist in his line. He used the whip in his left hand and the way he could pick up the off leader between the ears of the wheeler with that long lash

was a marvel. I never saw him make a miss crack. Jess was a wag in his way and when The Trained Nurse asked him what made the water so blue in a certain lake the first morning out he gravely informed her that it was because of the campers in the park coming down to the lake to rinse the blueing out of their clothes. During the general roar that followed Jess merely smiled quietly, and then turning to the nurse respectfully told her that it was due to the color of the rocks under the water. "There Jess, your conscience smote you, didn't it?" said she triumphantly.

And thus it went with us the livelong day. There was nothing



Old Faithful Inn, Yellowstone Park.

but fun and laughter and song in our coach during the entire drive of 142 miles, and we soon got the name of being the jolliest party along the line. Jess confided to me one day that another driver who had a glum sort of a crowd offered him \$2.50 for his load, but aside from the company's regulations in the matter Jess waved him off scornfully. There were nearly thirty coaches starting the day we did and they made a great procession.

We lunched at noon at Norris Basin, having enjoyed a beautiful drive through interesting scenery, and seeing deer and prairie chicken by the wayside. Of course, it must be remembered that this is a natural reserve and that the wild animals or fowl must not be molested.

Neither is any disfigurement of the park, such as carving the trees or scratching names on the rocks, allowed. The government purposes keeping this park as nearly as possible like nature made it, and so there is a refreshing freedom from the idiotic scribbling and carving so often seen at historic resorts. The park is free to the public to go and come at will, but there is a healthy surveillance of campers and tourists by patrols of the United States cavalry, whose headquarters are at Fort Yellowstone, Mammoth Hot Springs.

Between Mammoth and Norris we come, among other phenomena, upon a natural Apollinaris spring. Here we find pouring from the earth as fine a quality of Apollinaris water as man ever put to his lips, and we all had a refreshing drink. The Collector afterward, in making a memorandum of it in her notebook, said to the Mater: "Mamma, how do you spell that—that—Apoll-oop-sus water?" It was only one of the ordinary mistakes of a 10-year-old trying to use big words, but of course the Indian girl had to have her customary spasm of hilarity over it.

At Norris there is a vast basin of geysers, and the strong odor of sulphur is particularly suggestive of subterranean disturbance. Away across this steaming basin in the far distance may be seen snow-capped mountains, which though similar in color to the white crust of the basin, present a vivid contrast in temperature.

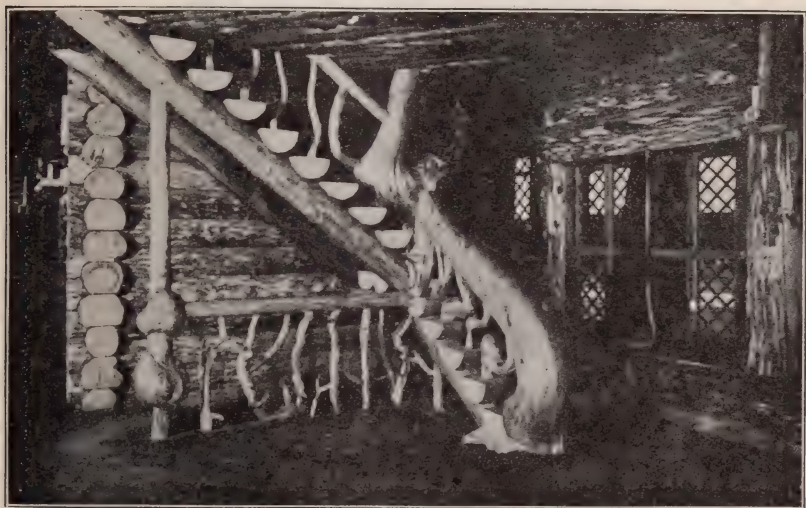
Speaking of temperature reminds me that the nights are always delightfully cool in Yellowstone and one has no difficulty in sleeping comfortably.

The afternoon drive takes us to the Fountain Hotel, in the Fountain Geyser Basin, where one of the chief natural wonders is the Mammoth Paint Pots. The walls of the dining room at this hotel are tinted with the product of these paint pots without any addition, and the effect is unique and altogether striking. In fact, one of the most impressive things about the park is the great variations in color seen on the trip. The incrustations on the basins are mostly white, gray and yellow, sometimes streaked with red. The pools are frequently pale blue or deep green—evidently a copper base, with the sulphur in the water forming sulphate of copper. The effect is beautiful in the extreme. The mountain sides are patched with red, indicating iron. In one place there is a cliff by the wagon road black as jet and

hard as adamant itself. It was a serious problem cutting into this cliff to form a roadbed.

I need not say that I have a specimen of this product in my vest pocket now—placed there by the Collector.

It is at Fountain that we get our first introduction to the bears of the park. They come down from the timber on the mountain sides at evening and feed on the garbage thrown out behind the hotels, and it is great sport for the children to watch their antics. I might add parenthetically that we are all children on this trip.



Rustic Stairway, Old Faithful Inn.

From the Fountain to Old Faithful Inn is only nine miles, and we were all glad that the drive was to be short that day—glad for the horses and for ourselves. We had seen so much that we wanted time to assimilate some of it. Dr. W. mused that it would give him an opportunity to play the gallant with some of the ladies of the party, and Dr. Izaak had been peering with eager eye into the various trout streams along the route. So we pulled up in front of Old Faithful shortly before noon a well-contented and happy coach load. (It may be noted that I have not attempted to analyze what was in the minds of the ladies of the party, because I have long ago learned the utter futility of guessing what a woman has in her mind.)

And now comes the most difficult part of my task in writing of Yellowstone. I have already stated that it was an almost hopeless effort to describe the natural wonders of the place, but at this point I am in a still greater dilemma in trying to give an adequate description of something wrought by the hand of man. The name Old Faithful was given the place in honor of a certain geyser which plays with un-



Old Faithful Geyser, Yellowstone Park.

varying regularity at intervals of from sixty-five to seventy-five minutes, and this geyser is naturally the center of attraction in the locality. Within a few hundred feet of Old Faithful a hotel has been erected and named after it, and it is the description of this hotel at which I falter. I am not going to qualify my statement in the slightest degree when I say it is the most unique and artistic building in the world. The man who designed it was a genius of the first order.

It is built entirely of logs and the partitions are either logs or rough lumber just as it came from the saw—even to the mill men's chalk marks on it. In every nook and corner the rustic effect is carried out in the minutest detail. The door latches are wrought-iron, the stairways are trunks of trees with natural curves, while the balustrades are formed of limbs. The steps are half sections of tree trunks with the flat side up. The candelabras in the dining room are cross pieces of small trees bolted together and suspended by chains. The under side of the roof of the dining room—there is no ceiling—is composed of logs delicately tinted. The immense fireplaces are built of boulders in beautiful designs. The—but what is the use? I might go on enumerating the details of this wondrous rustic palace from now to the end of the chapter, and then would convey no adequate impression of it. It must be seen, and lived in, and studied to be appreciated. And then the size of it! It is 650 feet long, and looking up from the corridor floor to the gable roof above—as I said there is no intervening ceiling—it is ninety-six feet high. And it is all indescribably beautiful. To cap everything it is fitted up with Arts and Crafts furniture especially designed for it, and the effect on the artistic temperament is bewilderingly fascinating. Am I using too many adjectives? Go there and see this miracle of art in the midst of Yellowstone and then come back and tell me if I have been exaggerating. Its wonders can never be spoken in words.

A battleship searchlight has been placed on the peak of the roof and at night it is turned on the geysers in the vicinity and up among the timber on the mountain side, making a veritable wonderland of scenic splendor. We had a delightful rest at Old Faithful. Dr. W. wrote love letters—at least, I can only suppose those were the kind he wrote—and took pictures. Dr. Izaak, true to his instincts, went fishing, and I can vouch for the quality of the trout he caught, because some of them were placed on my plate the following morning. Speaking of pictures reminds me of an amusing experience I had trying to take Old Faithful Geyser in action. I had not yet seen it play, but the Collector had, and she volunteered to assist me with the picture. We sat out on a bench in ready distance and soon we could hear a puffing and rumbling sound in the crater. Then puffs of steam began to come, and presently spouts of hot water. “Now,” said I, “you tell me when it is at its highest and I will make the exposure.” A mo-

ment of suspense followed, the fountain playing higher and higher. "There," she exclaimed suddenly, "snap it." I did so, when lo and behold the water kept going on still higher, till it reached fully seventy-five feet beyond the place where I exposed it. I hurriedly changed the film and made another exposure, laughing the while at the Collector for her miscalculation. "Well," said she, "I was further away



Sage Brush Tourists, Yellowstone Park.

from it when I saw it before." I found I might have taken the picture more leisurely because the geyser plays three or four minutes and ascends 150 feet.

While at Old Faithful we got our first introduction to the real simon-pure "sage-brush tourist." The park, as I have said, is free to everybody, and those who can not afford the expense of being transported by the Yellowstone Park Company's coaches and staying at their hotels may tour the park in their own conveyance and camp out along the route. These are called "sage-brush tourists," and some of

them present a unique spectacle. It may be an old lumber wagon drawn by a team that probably crossed the divide in the early days of Abraham, but no matter what the outfit the people are all happy and enjoying the trip as much as we.

It was also at this hotel where the first of a series of entertainments was inaugurated. In the evening after the sightseeing of the day, when all were gathered in the corridor of the hotel, songs, recitations and music by talent in the party helped to pass a most delightful evening. Chief among the entertainers were some gentlemen from Georgia—royal good fellows and afterwards known on this trip as "The Georgia Boys."

The next day we had a long drive, but we were prepared for it, and every moment was interesting. Our destination for noon was Thumb Lunch Station, on Yellowstone Lake. During the forenoon we passed by mountains and across gorges in bewildering confusion. It is also on this drive that we cross the divide, at a place called Two-Ocean Pond. The water from this pond empties at one end into a river which finally takes it to the Pacific, while from the other it flows into a stream running to Yellowstone Lake, and from there through the Yellowstone River to the Missouri, and on by way of the Mississippi to the Atlantic.

At Thumb the arrangements for luncheon were most perfect. Everything was placed in readiness on the table and we were permitted to help ourselves, which is really a great comfort to a ravenously hungry crowd such as we were. And let me say in passing that the food at the association's hotels and lunch stations is most excellent, the marvel of which is that they are situated a thousand miles from a market of any considerable size, and that much of it has to be hauled by freight teams nearly seventy-five miles over mountains rising 8,400 feet above sea level.

It is at this point where the phenomenon exists of a hot water basin so very near the edge of Yellowstone Lake that it is said one can catch trout from the lake and, without changing his position, toss the fish with the line over into the hot water and cook it.

Between Thumb and the Lake Hotel, where we stopped for the night, we had one of the most thrilling experiences of the trip. This is the drive down Corkscrew Gorge. The road runs along the side of a mountain and forms a perfect corkscrew with its sudden curves.

The descent is very rapid, as is also the pace at which we travel. At the top Jess puts his foot to the brake, flecks the leaders with that long whip, and we begin to boil down the mountain. In and out, in and out we go, sweeping around the sharp curves and scattering the gravel as the wheels cut the turns. Here we are away up the gorge, with the right wheels near the brink of an unending chasm below and going at a pace to make the hair raise. What if one of the horses should stumble or make a mis-step? What if Jess should miscalculate a few inches in rounding a curve? What if a wheel—but all this conjecturing is folly. Jess is a Montana boy and has handled horses all his life. Coaches have gone over this road hundreds of times before at the same pace, because this is the way all mountaineers drive down hill, as we afterward learned in the mountains of British Columbia. Besides, we are out for a good time, and we are having it, and it will not help any to get nervous, so we abandon ourselves to the exhilaration of the thing and trust to luck. It is true that at one time in the early part of the descent I got something of a start. We were going at a terrific clip, with everything jingling and the dust flying. We were all beginning to grow tense with excitement, and no one was saying a word. I was watching Jess. It seemed utter profanation and flying in the face of Providence to do anything but hold onto the horses and force the brake. But what was my consternation to see Jess suddenly swing that long snake whip and lift the off leader with a terrific lar-rup. For one brief moment I almost doubted Jess, but I soon found he knew what he was doing. The most dangerous thing of all is to have one of the leaders lag a little and dangle the whiffletrees or run the risk of stumbling. To go down a mountain like this safely everything must be keyed to the highest pitch and kept keyed. Maybe this is why all the passengers find themselves under such a tension in making the descent. But it was all so glorious, and if we did breathe a bit more freely on reaching the level we were none of us sorry we had had the experience.

(To be Continued.)

CALL OFF YOUR DOGS.

Do, please, call 'em off. It was all unintentional, and I hasten to explain. The new baby wasn't mine, and this is how it all happened. Some time ago a new, cute little rascal of a nephew came

into the world to see how he liked it. It was the only nephew I ever had and I went daffy over him. As is customary when I get daffy, I wrote some poetry and I called it "The New Baby." After relieving the safety valve in this way I threw the manuscript into a pigeon hole and forgot all about it—the poetry, not the baby. No harm would have been done if the thing had stopped there. But one night when it was near morning, when everything was very, very quiet about the house and I was wearily turning over the last of the page proofs for the next issue of the DENTAL REVIEW, I was suddenly confronted by a blank space on the last page, with the laconic "more copy" of the printer written across it. (Confidentially, if I ever commit bloody murder it will be the person of a printer, who calmly asks for more copy just before going to press.) In an evil moment I reached out my hand and sleepily fumbled in a pigeon hole for some manuscript. I fished out this idiotic effusion, written more than a year before. It fitted the blank space and in it went. The morning after the journal came out my troubles began, and I've been dodging misfit congratulations ever since. I couldn't turn a street corner without being slapped on the back and asked how the mother and baby were. I got it over the 'phone and through the mail. I have had requests for cigars and suggestions about nursing bottles. Circulars have come with new styled perambulators pictured on them. Photographers have sent me their cards, and dry goods men have grown very friendly. But the limit came when an accident insurance agent called to argue the desirability of taking out a special policy against stepping on a tack with bare feet.

I rise in desperation to wave the distress signal over a clamoring public and to shout with eloquent acclaim that *the baby is not mine*. Call off your dogs.

DOMESTIC CORRESPONDENCE.

LETTER FROM DR. T. W. BROPHY.

(CONTINUED FROM OCTOBER DENTAL REVIEW.)

At the close of the meeting of the Central Deutscher-Verein Zahnartze, the International Dental Federation Executive Council and officers of the different departments held a session, and during that meeting much of value was brought out. The commissions represented were: The International Commission of Hygiene and Public Dental Service—President, L. C. Bryan, Basle, Switzerland; Commission on the International Dental Press—President, E. Förberg, Stockholm, Sweden; Commission on Jurisprudence and International Ethics—President, William Carr, New York; Commission on Military and Naval Dental Service—Chairman, Williams Donnelly, Washington, D. C.; International Commission of Education—Truman W. Brophy, Chicago, Ill. A commission was organized entitled Nomenclature and History. The president of this Commission is Dr. Grevers of Amsterdam, Holland, and Vice-President Dr. Charles McManus of Hartford, Connecticut. We had present with us from America Drs. Franz, Schultz, Appel and Good of Chicago, besides many visitors from other countries. The countries having members in the International Dental Federation are: Spain, Italy, Norway, United States, Germany, England, Australia, Austria-Hungary, Belgium, Denmark, Finland, France, Holland, Mexico, Switzerland, Brazil, Portland, Uruguay, Canada and Russia. I present herewith the program of the meeting, as I know many readers of THE REVIEW are desirous of knowing the work of this body:

Program for the joint meeting of the executive committee of the Federation Dentaire Internationale and its various commissions at Hanover on August 7, 1905:

1. Report of the president.
2. Specification of the relations of the F. D. I. to its various national committees.
3. Specification of the relations of the national committees to the dental organizations of their respective countries.
4. Determination of the conditions of admission to the F. D. I. in certain special cases.

5. Exchange of opinions concerning certain desirable revisions in the rules and regulations.

6. Concise report of the national committees regarding the steps which have been recently taken in their respective countries in the matter of public dental hygiene and dental education.

7. Discussion as to what shall be the plan of work of the F. D. I. in the immediate future.

8. A consideration of the question of the utility of publishing a pamphlet on the care of the teeth in a form which will make it accessible to the poorer classes.

9. Report of Dr. Haderup as to the possibility of manufacturing a good tooth brush at a price which will put it within the reach of the poorest classes.

10. Discussion of other questions which may be brought before the meeting without a month's notice, is permissible only in as far as no objection is offered by any member of any national committee.

RESOLUTIONS ADOPTED.

(1) The wishes of the national committees in matters pertaining to their own countries shall be paramount in all things, and no agitation or work of any kind shall be undertaken by the F. D. I. or any of its commissions in any country until it has received the endorsement of the national committee of that country.

(2) All appointments in any country as members of commissions or on committees of any nature shall be made under sanction of the national committee of that country.

(3) All national committees shall seek to obtain the recognition and support of the representative dental organization of their respective countries, and thereby to act as real representatives of the dental profession of their countries.

(4) Applicants to membership in the F. D. I. must have either the degree of the country in which they received their preliminary education or of that in which they practice.

With a full understanding of these rules I have no doubt the great work of the Federation Dentaire Internationale in promoting the highest and best interests of the profession in all its branches will proceed with the full co-operation of dental associations everywhere.

The next annual session will be held in Geneva, Switzerland, in August, 1906. At the close of the meeting of the International Dental Federation and the usual social functions which followed, we were invited to go to Essen, the German city which has been made famous by the celebrated Krupp gun works. Late in the day, however, we received a telegram from Dr. Witzel that the works were at that time closed, but we were all cordially invited to the Dental Clinic, which was established several years ago by the officers of the works and which is conducted at their expense for the benefit of the employes. Knowing that the works were not open on that day to visitors, only a few of the members visited the city of Essen. I had the good fortune of having with me as a traveling companion for several days Dr. Bryan of Switzerland. Leaving Hanover in the afternoon we went by train to Bad-Nauheim, a city of curative baths. On reaching there we left the station to look over the city and finally decided to stop at the Kaiserhoff, a very delightful hotel, a short distance from the railroad depot. There I found a number of Chicago friends and I further found that it was at this hotel where my old friend and traveling companion in this and other countries, Dr. W. C. Barrett, made his stay while in search of health, and where he passed away. The rooms assigned Dr. Bryan and myself were pleasant, looking out upon the beautiful garden. The balconies of the hotel were filled with people at all hours of the day, at breakfast or luncheon or dinner, chatting or taking their tea. I was not a little surprised when the proprietor of the hotel informed me that the room adjoining the one which I occupied was the one in which Dr. Barrett closed his life. As in years gone by our rooms were joining, mine was occupied; his was empty. After the lapse of two days, and after visiting the baths and the mineral springs and other places of interest, Dr. Bryan and I went up to Bad-Homburg, about thirty miles away, by automobile. This was a most interesting little journey. We passed along the tortuously narrow, smoothly macadamized roads, through little German villas, but after riding awhile we entered a village where the road became so rough that the automobile jiggled and rattled in a manner most unpleasant, and yet when we attempted to reason out the cause of this roughened condition of the village road we found ourselves entirely baffled, because on leaving the village we found the smoothly macadamized road again confronting us.

If anyone reading this article is able to explain why the roads within the villages should be so rough, while those in the country between villages are so smooth and so well kept, it would be gratifying to at least two who are baffled for an explanation.

After entering the ancient city of Homberg, the center of European royalty during the summer months, we visited the old, old fort of Saalburg, formerly occupied by the Romans about 2,000 years ago. It is elevated above the city of Homburg about 500 feet and commands a view of the entire valley reaching beyond. Frankfort-on-the-Main can be seen in the distance about thirty miles away. One day only was passed in Homburg, when we went to Frankfort. In Frankfort, as in nearly all the other cities of Germany, we were greatly impressed with the artistic characteristics of the people. I presume there is no more beautiful station in the world than we find in Frankfort. Immediately on leaving the station, instead of observing the streets crowded with vehicles, one is confronted with some strikingly beautiful figure or fountain, an exhibition of an artist's skill, and there is always a vacant space preserved for those who desire to leave the station by foot without obstruction. Flower gardens and clean, beautifully paved streets, in striking contrast to those we have at home, are always to be seen. The palm garden of this city is one of the most marvelous of its kind that the world affords. Our stay here was very short, but the impressions we received will never be forgotten. Leaving Frankfort at noon, we reached Old Heidelberg three hours later. There we visited the University, the Old Castle, and traversed the mountain road. We visited the Place-of-Arms in which the students fight their duels. A gash in the right cheek of a young man is far more satisfactory to him than a little one in the scalp or even a great wound in the scalp, because he regards it as a misfortune that his scalp wound is not visible. From Heidelberg we went to Strasburg, which has, like all German cities, an excellent school system. It has a dental infirmary, established and supported by the municipality, which is for the benefit of all school children whose parents are unable to pay for the services of a dentist. The children are required by the school authorities to go and have their teeth examined and cared for properly. It is well known that education is compulsory in Germany. All children between the ages of 6 and 14 must attend school, and all school children are

subject to examination regarding their physical condition. Those who are able to pay the bills of practitioners may select their own attendants, but those unable to pay are cared for at the public expense. This is surely humanitarian and worthy of imitation by this and other countries.

I found the dental school in Strasburg prospering, though not very large. Students were actively engaged in practical work and their teachers were working earnestly and enthusiastically.

Here I bade my friend, Dr. Bryan, good-bye and took the train for Paris, while he left on the same evening for his home in Basle, Switzerland. In Paris I joined my friend, Dr. Good, who had preceded me a few days. Knowing that Monday and Tuesday were observed as holidays, we left Monday evening for London by the way of Boulogne and Dover, and arrived at the Hotel Cecil on the evening of the 15th. After two days in London I visited the Guernsey Island, while Dr. Good went to Ireland to visit our mutual friend, Dr. Younger. The Island of Guernsey is made famous by the works of Victor Hugo. On entering the Haute Ville house, the Guernsey Island dwelling of Victor Hugo, no matter which way you look or what room you enter the eye meets most remarkable products in rich furniture and interior decorations—China paintings, the works of the most skillful sculptors, etchings, glass in all its beautiful colorings, rugs, tapestries, all of unique and artistic forms. The room in which he did so much of his literary work is not unlike a photographer's operating room, being covered with skylight. Through the windows looking toward the sea a remarkable view is obtained, for the house stands about 200 feet above the level of the water, and in the corner of this room are tables immediately adjoining the glass paneled walls where Victor Hugo stood while writing. It may not be known by all that his hobby was to always stand while writing. To the extreme right and thirty miles away is the Isle of Jersey, and a little to the right and to the east is the Isle of Sark; to the left and further off is the Isle of Aldernney, to the north of which are the Casquett rocks, referred to by Victor Hugo as the midnight assassins, since many ships have been wrecked thereon. A reference to this home of Victor Hugo is all that time will permit me to make, though so many things of beauty are to be seen there that much time might be spent to advantage in describing them and their associations.

To those who have never traveled through the Isle of Guernsey, and who contemplate a visit to this most remarkable place, I would recommend an early start in the morning with a good guide and a high vehicle, as the stone walls along the North road frequently obstruct the view of the landscape. We visited the old government house, which was filled mostly with English tourists, and spent a pleasant evening, and in the following morning boarded the steamer on my return to Southampton to prepare for my homeward voyage on the Kaiser Wilhelm DeGrosse, which we boarded on the morning of the 23d. Our return was by no means a counterpart of our passage to Europe, as the storm was on when we left and never abated until we reached Sandy Hook, where we arrived on the morning of the 29th of August, to find that peace had been declared that day and Russia and Japan were no longer at war.

TRUMAN W. BROPHY.

AUSTIN LETTER.

AUSTIN, TEX., Sept. 8, 1905.

TO THE EDITOR OF THE DENTAL REVIEW.

Dear Sir:—That the path of the dentist is not always strewn with garlands of roses is evidenced by the following occurrence to an Austin dentist, who is deaf in his left ear:

Miss Primrose, who lives in Galveston, was sojourning in the capital city for a few months, and had been occupying Dr. Blank's chair several days in succession. She had one more filling to be inserted, and after an all morning's siege she said: "Now, doctor, I'm going to leave for home this evening. Can you finish my teeth if I come back at 2 o'clock?" "Oh, yes, indeed!" replied the doctor. "Now, I'm going to claim the chair when I come, it does not make any difference who is in it." "All right; I'll wait on you when you come," replied the knight of the forceps.

It seems that during Miss Primrose's visits to the aforesaid doctor he had been pressed for time in which to fill his appointments, and had had trouble to find leisure in which to devote to Miss Primrose. He had often been compelled to beg her indulgence, but now she was to take final leave of him, he must keep his appointment.

The doctor, after taking a hurried lunch, was carefully preparing little details about his chair so that he could accelerate Miss

Primrose's filling, when just a few moments before the appointment time, Miss Rush came bounding in and the following colloquy took place.

"Doctor, I couldn't come the other day; I had company. Can you wait on me now?"

"I should be glad to do so, but I have a 2 o'clock appointment with a lady from a distant city," replied the dentist.

"But she hasn't come, and you can wait on me 'till she comes," rejoined Miss Rush.

"I'd be glad to do so, but I know she'll be on time, for she's going away on the 4 o'clock train," replied the doctor.

Notwithstanding the doctor's remonstrance, and in the face of his explanation, Miss Rush took the chair, very much to his chagrin.

Of course, he did not do anything but shift around the articles on the operating table (which were already in their proper places), thus delaying matters until Miss Primrose arrived, when he announced to the lady in the chair that his appointment had arrived.

"Well," said Miss Rush, "you can fill one tooth for me?"

"I'd be pleased to serve you at another time, but I must wait on this lady now," rejoined the doctor.

Miss Rush reluctantly gave up the chair and moved around by the mirror, which was on the deaf side of the dentist. Miss Primrose took the chair and the doctor prepared to finish her filling. But Miss Rush continued to talk and the doctor's infirm ear refused an audience to her words, thus again placing him in a dilemma. But a happy thought came to his relief. If he could not hear her words he could at least tell by the modulation of her voice when, or about when, he would be expected to respond, and in order that his response should be perfectly agreeable, he decided to answer in the affirmative by saying "yes" whenever he should rejoin.

This method seemed to offer a solution to the dilemma until the lady had finished at the mirror and reached the door of exit. when she turned and propounded another inaudible question, to which the doctor again used the agreeable "yes." But to his astonishment the lady disappeared out of the door as if by magic.

Miss Primrose looked queer and said: "Doctor, you didn't hear what that lady said, did you?"

"No," replied the doctor.

"Then why did you say 'yes' to her?"

"Oh, just to be agreeable," replied the doctor.

"Well, you weren't," said Miss Primrose.

"Why not?" exclaimed the doctor.

"Because, when she got to the door she said, 'I reckon you're glad I'm goin'?' and you said 'yes'."

The doctor immediately ordered sackcloth and ashes for one—and he is now studying that good old hymn entitled, "Oh, pity, Lord, Oh, Lord, forgive, and let a poor repenting dentist live."

Yours in sackcloth,

F. S. C.

NEW YORK LETTER.

The opening ball of the season, so far as dental societies in and around "little old New York" are concerned, was by the New York Institute of Stomatology, on Tuesday evening, October 3, at the usual place, the "Chelsea," in West Twenty-third street. After an informal dinner, at which some fifty gentlemen sat down, the president, Dr. Charles Otis Kimball, presented the essayist of the evening, Dr. Charles McManus, of Hartford, Conn., on "The History of Dentistry from the Earliest Times to the Founding of the Profession by Hayden and Harris, with Special Reference to the Immediate Publication of Such Work in English."

This was illustrated with over sixty lantern slide illustrations.

This paper is the same which Dr. McManus has read during the past winter elsewhere, but revised, condensed, and shaped to be very acceptable. In book form, as hinted at in the foregoing, it will be very acceptable to our craft. It seems to be very complete. The illustrations were exceptionally fine. Of course, such a paper gives no chance for extended discussion.

The New York Institute of Dental Technique held its October meeting at the "Chelsea," with its president, Dr. F. C. Brush, in the chair. This society, like the Institute of Stomatology, has an informal dinner at 6:30 to which guests and friends are invited.

Dr. W. D. Tracy, of New York, read a paper entitled "The Use of Cement in the Preparation of Cavities," the gist of which was that he filled all cavities where there was only a thin layer of dentine over

the pulp with a cement, well up toward the enamel wall before starting his metal filling, thereby keeping pressure from the pulp and avoiding irritation.

Dr. Mehlig in discussion said he used oxychloride of zinc with a drop or two of hydronaphthol mixed with the fluid, in all cases and found it made as hard a filling and better than the oxyphosphate.

Some one else said the use of hydronaphthol with oxyphosphate was an excellent filling. Several others participated, the main differences being in point of manipulation of various cements for the purpose described by the essayist.

A paper entitled "Modified Perry Occlusal Tips," was then read by Dr. J. H. Hanning. He also demonstrated on the model his ideas. His method differs from Dr. Perry's in that he uses only one pin and that a *large* one, and the pulp of the tooth must be destroyed to enable one to use it on account of the size of the pin.

The Perry tip is fastened by two *small* pins, one on either side of the pulp chamber.

In the discussion which followed, the question of the advisability of devitalizing pulp tissue came to the front to the exclusion of nearly all else, and was debated pro and con without getting any nearer a definite solution of the question than before.

A. W. Harlan, M. D., D. D. S., of New York, was the essayist at the first regular meeting of the Second District Dental Society this season. The session was held at the Kings County Medical Society's Library Building on Bedford avenue, Brooklyn.

The president, Dr. Gould, in introducing Dr. Harlan, announced as his subject "Some Thoughts on Disinfectants."

The paper was not very long, in fact it contained so much of vital importance that one felt eager for more. Dr. Harlan in opening said the main subject was almost strictly new. "It does not matter what method of sterilization you are using now, you are invited to try another." It was explained that if water, our ordinary Croton, Chicago River or any other, be placed in a copper pot, the inner part of which has previously been cleaned so that a bright surface is presented, and allowed to remain about three and one-half hours it will be sterilized without boiling. In the process a small amount of colloidal copper is dissolved which is sufficient to accomplish the sterilization. It has been proven that sulphate of copper one part to eight million

will sterilize water in eight hours. This has been accomplished at some of the sterilizing plants of great cities.

Copper cooking utensils—those not tin lined—make their contents absolutely sterile.

Dr. Harlan uses such sterilized water altogether in his office, to which he adds for germicidal purposes the mono-chlor-acetic acid, the efficiency of which is greater than the tri-chlor-acetic acid which we have been familiar with. The odor of the former is almost nil by comparison. It has the property of destroying putrescent odors almost instantly. He demonstrated its potency in this respect by adding a small quantity of some sulphuretted hydrogen. The gases are destroyed almost as soon as formed. Iodine and sodium iodide were also experimented with.

Dr. Harlan claims no irritation from the mono-chlor-acetic acid if it is sealed in root canals, and when they return for treatment the odors have entirely disappeared.

His sterilizing and disinfecting apparatus consists of three deep glass trays, a copper pot for sterilizing water and a tight metal box containing a thirty-two candle power electric lamp.

A quantity of water from the copper receptacle is placed in the trays. The first tray contains nothing but plain water, the second contains probably a quarter ounce of sodium carbonate and the third a smaller quantity of the mono-chlor-acetic acid. Instruments are scrubbed in the first tray, then placed in sodium carbonate solution for a few minutes, then transferred to the acetic acid solution, after which they are dried with a cloth and placed in the hot box, the electric lamp lighted, which in a few minutes produces a temperature of about 400 degrees which in itself is sufficient to sterilize.

The sterilization of water without boiling is a very valuable thing for us to know.

The crystals of mono-chlor-acetic acid are white or colorless. We are assured that this is the first time this method of sterilization has been brought before any medical body.

Dr. Babcock in discussing the subject gave it as his opinion that if we were to drink water sterilized in a copper vessel as Dr. Harlan explained and which he said we could without any ill effect, that there may be some toxic effect from the copper by cumulative action. This Dr. Harlan said was impossible. Dr. LeRoy thanked the essayist

for presenting to the profession such a simple means of sterilizing our hands and instruments. He said he had used the mono-chlor-acetic acid only a few days. In the one case of putrescent pulp canal it had acted excellently.

Dr. Hanning said he felt that we were further advanced by such a paper. It is the hardest thing in the world to keep things sterile. Formalin is a dangerous drug; 5 per cent destroys the nails of surgeon's hands.

In Dr. Harlan's closing remarks he said the hot box was also used for sterilizing all towels, napkins, etc., used in the office.

The society voted Dr. Harlan thanks for presenting the most valuable paper on the subject in a long while.

A joint meeting of the Odontological Society and the First District Dental Society was held at Berkeley Lyceum on West Forty-fourth street on the evening of October 23d to do honor to our eminent fellow countryman, Prof. Dr. W. D. Miller, of Berlin, Germany.

It was a characteristic and a representative audience which greeted him and filled the Lyceum to overflowing. Men from towns two hundred odd miles away came to do him honor.

Dr. A. L. Swift, president of the First District Society, in a few well chosen words, introduced Professor Miller. He read a paper entitled "The Function of Bacteria in the Alimentary Canal." In his own inimitable manner he led up from animal and plant life to the human existence and concisely but plainly stated his position. He dwelt at some length on the interdependence and relationship between bacteria and human and other beings, drawing similes to human traits or those of lower organisms on land or in sea.

The body acts the part of host to some bacteria. They seem to be necessary to our existence. He cited experiment where eggs were made absolutely sterile, the chicks hatched under similar conditions, then fed on sterile food. The chick did not thrive well, in fact did not grow, and was becoming weaker, when its diet was changed to the regulation barnyard kind and immediately the bird began to develop and got well, so to speak.

Animal life depends upon the vegetable and the reverse is also true.

Bacteria alone can carry on the process of digestion, similar to the ferments of the body.

He said that some of our best dental pathologists contend that bacteria are essential to digestion and that we should not use antiseptic mouth washes too much. Bacteria are the cause of all forms of fermentation. It is known that there are certain bacteria normal to the mouth known as normal flora; they continue to exist throughout life.

The problem of immunity to caries is the most important in the dental profession today.

His lecture was followed by an exhibition of lantern slides.

Dr. Kirk, of Philadelphia, opened the discussion and said it was not fair to consider the experiment on the chick as conclusive as it was suffering the penalty of a radical departure from former life which was against all nature. Nature does things by slow processes of evolution and not by sudden disturbances.

Dr. Harlan, of New York, spoke to some length, one remark being, "If we were able to cultivate in the mouth a bacteria that would counteract caries such as has been done to counteract disease, we could solve the problem." Several other gentlemen contributed to the discussion but nothing of import was brought out.

Dr. Miller said but a very few further things in closing the discussion, the most important being that the experiments on the chick were quite conclusive.

The first fall meeting of the First District Dental Society occurred on Tuesday evening, October 10, at its usual place of meeting, the Academy of Medicine, 17 West Forty-Third street.

The essayist of the evening was Dr. Herbert Locke Wheeler, of New York, on this subject: "Is There an Ideal Occlusion of the Teeth in the Human Jaw?" He spoke of some men as being so deeply interested in this subject as to believe that every variation from the "ideal" is a species of degeneration, which should be promptly returned to the original standard "by their highly skilled selves."

He described at some length his examination of the skulls of numerous tribes from ancient Mexico, of the Peruvian brought here by Professor Bandolier, also from British America, Michigan and Kentucky, from the mounds collected by Professor Smith, and from Siberia, southern California, Tennessee, Terra del Fuego and Patagonia.

He claimed that there seemed to prevail in all these cases *not*

the beautiful idea of overlapping incisors of the superior maxillae, but a striking edge to edge, and that the incisors were equally worn down with the molars and bicuspid. From this condition he apparently reasoned that the necessity for an overlapping bite, and perfect cusping, as desired by the modern orthodontists, was not so pronounced after all.

Toward the close of his paper he raised this question: Might it not sometimes be the case that some children would favor the facial bones of one parent and the teeth of another, and might not the result be such as to not merely make permissible but actually *demand* the extraction of one or more teeth? And finally he said he was not convinced that there might not be cases in which extracting of teeth for regulating might not be a necessity as well as justifiable.

Dr. Farrar, the ancient and honorable, opened the discussion by remarking that there *is* an ideal occlusion. The process of evolution has changed the bite to overlapping because the present needs of the individual are not for edge biting. It may be considered degeneracy, but how about enlarged brains? Increasing power of brain over matter? The truth is, there is no *one* ideal.

Dr. Ottolengui summed up Dr. Wheeler's paper thusly: It is an attack upon certain fundamental principles in orthodontia. He seemingly offered scientific facts for extraction. His (Dr. Wheeler's) statement that the new school recommends never to extract, has never been made. What has been said is, never to extract when you can do otherwise.

He says that we purchase appliances and presto, the teeth are all beautifully regulated. That sentence is not fair. Those appliances do not regulate teeth, no more than a piano plays Mozart. It is a system and not anything else. Haven't they a right to ask to please not extract teeth?

Dr. Wheeler has gone to museums to study where they have only perfect specimens of crania, because they won't accept anything else from the individual who furnishes them. There is only the modern school of orthodontia, no new school.

Dr. Young, formerly of Detroit, believes there is an ideal. By balance we know when we have restored type. He considers that fully 60 per cent of mal-occlusion is due to lack of use of teeth. As to large teeth in small jaws, why don't we see that in deciduous jaws?

Dr. Bogue asked Dr. Wheeler to consult Dr. Hawley, of Ohio, as to types and get his answer mathematically.

Dr. Wheeler was asked to close the discussion but he said only a few words.

Yours truly,

THE BOROUGHs.

PRACTICAL HINTS DEPARTMENT.

EDITED BY G. W. JOHNSON, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, THE DENTAL REVIEW, 55 State street, Chicago, Ill.]

Supporting a Sore Tooth While Drilling:—Instead of supporting a tooth by ligature to prevent pain while it is being drilled, take modeling compound, soften it and make a splint for both lingual and buccal sides of the teeth to support the sore tooth while drilling. This will prevent jarring and also prevent pressure on the inflamed peridental membrane.—*T. L. Gilmer, Chicago.*

Grinding the Teeth to Produce Esthetic Lines:—Good results may be obtained by grinding the teeth to restore the esthetic line of the mouth. Certain lines will give the teeth an aristocratic look, and dentists should cultivate the art of finding the correct shape for the teeth. A line slightly one way or the other will have a great effect on the general appearance.—*H. L. Schaffner, Florence, Italy.*

To Roughen the Surface of a Solid Gold Inlay—Take a plugger point that has been well tempered and grind the end to a needle point. Insert in the engine mallet, place the inlay in something solid, preferably a hammer handle with a small end so the inlay may be held firmly, and while running the engine at a high speed direct the blow at different angles upon the inlay. This produces a surface to which cement will adhere firmly.—*G. S. Hershey, Michigan City, Ind.*

Cavity Margins for Inlays:—Every portion of the cavity, and in particular the edges, should not only be well shaped, but brilliantly polished. With small Arkansas stone-points a beautiful finish can be obtained, which should extend over the edges, giving everywhere in the neighborhood of the cavity a polished surface from which it is easy to remove the matrix. It is folly to attempt making a perfect matrix against a sharp, uneven or rough edge, or to expect always to remove it without accident from a cavity around which rough surfaces have been left.—*N. S. Jenkins, Dresden, Germany.*

Amputating Roots in Treatment of Pyorrhea:—In treating pyorrhea it sometimes becomes necessary for us to amputate the roots of the teeth. In an upper molar, where we often find resorption on the lingual root, and still the buccal roots have a substantial hold to the alveolar process, I think amputation of the lingual root is good practice because we not only remove the irritant from the process and the gums, but we also give ourselves an opportunity of getting to the bifurcation of the other roots, from the lingual aspect, therefore being sure of a complete removal of the deposit.—*B. C. Campbell, Lake Geneva, Wis.*

Orthodontia:—If thumb-sucking in early infancy can produce prominence of the anterior segment of the maxillary arch, can not intelligently and persistently applied manipulative pressure by the dentist or the dental nurse (when we establish this class) or the anxious mother, broaden and direct into proper form the developing arch of the child? Finger pressure laterally in the mouth of the infant after the appearance of the deciduous teeth and before the eruption of the permanent molars and central incisors, could, I am sure, direct the structural development in these growing tissues, and help to overcome the inherited tendencies of past ages of lack of use of the organs.—*C. M. Wright, Cincinnati, Ohio.*

Cleaning Teeth:—Instrumentation should never be done with more force than just sufficient to remove the deposits; more will unnecessarily annoy the patient, and may injure the tissues. The movements in scaling should be gentle and deliberate, but positive, moving quietly into the remotest recesses after the hidden deposit, and having located it, the effort should be to remove it as quietly and

gently as though one were trying to get away with it without waking up the entire neighborhood. One tooth, or group of teeth, should be taken at a time and thoroughly scaled before going to the next unless the removal is particularly difficult, tedious and painful, when it may be wise to give that particular spot a rest. The use of iodine to soften and stain the deposits will facilitate their removal.—*Charles B. Rohland, Alton, Ill.*

Ethics in Dentistry:—There is no line in dentistry that is more difficult to draw than the line that divides the ethical from the unethical man. The man, his surroundings, the customs prevailing in the profession at the time and the condition of the public mind must all play a part. As we advance as a profession our ideas of what constitutes ethical practice will change to correspond. I wish to suggest that in each community at such a time every year, when our new graduates are entering upon their life work, members of our societies should call upon each one as early as possible and invite him to join in society work and sign the code of ethics before he has time to think of advertising. Get them before they take the wayward step and they will become an example in the community.—*Arthur D. Black, Chicago.*

Suggestions as to How to Avoid Failure in Vulcanite Work:—Use a good quality of plaster for both model and investment, and manipulate it so as to secure the greatest density with least expansion. Cut waste gates large enough to receive the excess of rubber and connect them with the peripheral margin of the matrix, but avoid the introduction of a large excess of rubber, using interposed muslin, and separate the case to determine the correct quantity. Heat the case gradually and uniformly, preferably by dry heat, and apply the pressure slowly, allowing ample time for the rubber to find its way into the waste gates, reheating the case if necessary. Place the flask above the water in the vulcanizer so that the vulcanization may take place in the steam and not under water. This prevents softening of the plaster.—*J. H. Prothero, Chicago.*

Troublesome Third Molars:—The most frequent cause of the serious complications attending the eruption of third molars is lack of vertical space for the proper development of the organ; nor is

this restriction always directly due to the disproportion between the size of the teeth and the dimensions of the maxillary. On the contrary, the irritation is usually produced by the contact of the previously erupted third molar with the distended membrane covering the erupting tooth in the opposite jaw. In most cases where trouble exists a careful investigation will disclose a distinctly visible imprint upon the inflamed gum, which receives its impact at all times when the mouth is unopened. A careful grinding of these cusps generally suffices to reduce the inflammation, relieve the pain and restore the parts to a healthy condition.—*W. Kelsey, Marseilles, France.*

Advertising.—Advertising in dentistry has been, and is now, condemned, not because it is contrary to the code of ethics as some newspaper men would have us believe, but because it is utterly impossible for any person in the profession to perform good and reliable operations for a small fee. The only thing in a dentist's advertisement that appeals to the public is the promise of something *good and cheap*. A dentist who advertises does so to gain patronage, get money and thus be successful; but after careful consideration of this question, and having asked the opinion of several practitioners as to what they would deem worthy to be called success in our profession, I have reached this conclusion: The dentist who receives the largest fees in his locality, not once in a while, but regularly, and continues to do so, is the dentist who should be termed successful.—*G. H. Henderson, Springfield.*

Prescription for Obtunding Sensitive Dentine:—

R	Menthol,	gr. XX
	Chloroformi,	F. ʒj
	Etheris,	F. ʒss

M. Sig:—Use as directed.

This will not completely de-sensitize all dentine, but in large cavities where there is an extensive area involved, and where the dentine is extremely sensitive, take a little pellet of cotton, saturate it with the above liquid, place it in the cavity after the rubber dam has been adjusted, and you will find by the time you are ready to excavate the dentine that the ether and chloroform have volatilized. The value of this remedy depends largely upon the volatilization of

these fluids. As these two liquids are volatilized there is abstracted from the tooth structures a certain amount of heat, and that volatilization drives the menthol into the decayed dentine. You can not remove the decay painlessly in all instances, but you will be surprised to find at times how painlessly you can remove it after applying this remedy.—*J. P. Buckley, Chicago.*

Pyorrhea Alveolaris Treatment:—I consider it the duty of the dental profession to prevent the loss of human teeth, and filling alone will not do this. We must be able to cure pyorrhea also. The treatment is surgical entirely, and the method is as follows: Anesthetize the gum by passing a blunt flexible steel needle—Good's pyorrhea needle—into the pocket, relieving enough of the anesthetic from the syringe to flood it. The anesthetic used is put up by Dr. Charles Oakman, Detroit, Mich. Hold paper rolls of cotton on each side of the teeth to prevent the patient from swallowing any cocaine, should we allow too much to escape from the syringe. It is usually best to wait one or two minutes after applying the anesthetic, and then proceed to remove the deposits from the teeth, one tooth at a time, operating in this manner until all are thoroughly cleaned. When through with the surgical work, flood the pocket with warm, chemically pure lactic acid, using the same kind of a needle just referred to, and cotton rolls. Now give the parts absolute rest. Keep away your instruments, but instruct the patient to massage the gum with powdered sulphur five minutes night and morning, and if no deposits were left the case will be entirely healed in two or three weeks. All loose teeth should be held firm by ligatures or bands and the patient instructed to use a mouth wash.—*Robert Good, Chicago.*

BOOK REVIEWS.

TRANSACTIONS OF THE FOURTH INTERNATIONAL DENTAL CONGRESS,
HELD AT ST. LOUIS, MO., 1904.

We are in receipt of volumes I and II, and judging from the character of the work in these two volumes, we have the assurance that when the third volume, which will complete the work, is issued, it will constitute a memorable addition to our literature. It is only when we examine the work in its entirety that we are sufficiently

impressed with the excellence of the papers and discussions and the really high character of the matter presented to the congress. The publication committee has done its work most admirably, and the publishers have given us a suitable setting for so important an event.

MANUAL OF CHEMISTRY.

A guide to lectures and laboratory work for beginners in chemistry. A text book specially adapted for students of medicine, pharmacy and dentistry. By W. SIMON, Ph. D., M. D., professor of chemistry in the College of Physicians and Surgeons of Baltimore and in the Baltimore College of Dental Surgery; emeritus professor in the Maryland College of Pharmacy, department of the University of Maryland. Eighth edition, thoroughly revised, with 66 illustrations, one colored spectra plate and eight colored plates, representing 64 chemical reactions. Published by Lea Brothers & Co., Philadelphia and New York. 1905.

Verily, "of the making of books there is no end," and the encouraging thing about it is that there is a very perceptible improvement in the text books prepared for our professional schools. This is a book of 643 pages, admirably arranged in every way and shows evidence of painstaking care in its preparation. The most impressive thing about the work is the excellence of the colored plates. They are exquisitely designed and emphasize in a popular manner one of the most fascinating features of the study of chemical reactions. Chemistry does some wonderful things, but nothing more wonderful than the brilliant hues she produces in some of her reactions.

MEMORANDA.

THE ILLINOIS STATE DENTAL SOCIETY

Requests all members who desire bound volumes of the 1905 transactions of the society to send their names and fifty cents to pay for same AT ONCE to the secretary, Dr. Elgin MaWhinney, 34 Washington street, Chicago, Ill. The printers are working on them now and as only enough to fill orders will be printed you must not complain if, owing to your own neglect, you fail to secure one.

OHIO STATE DENTAL SOCIETY.

The fortieth annual meeting of the Ohio State Dental Society will be held in the Great Southern Hotel, Columbus, Ohio, December 5, 6 and 7, 1905. An exceptionally strong program of papers and clinics has been provided and we have every assurance of a highly successful meeting. Come!

F. R. CHAPMAN, *Secretary*,
305 Schultz Building, Columbus, Ohio.

IOWA STATE BOARD OF DENTAL EXAMINERS.

The Iowa State Board of Dental Examiners will hold its next meeting for examination of candidates at the Capitol building, Des Moines, Iowa, December 12 and 13, 1905, beginning at 9 a. m.

For application blanks and all information apply to

E. D. BROWER, *Secretary*,
Le Mars, Iowa.

INSTITUTE OF DENTAL PEDAGOGICS.

The annual meeting of the Institute of Dental Pedagogics will be held in the Fifth Avenue Hotel, New York, December 28th, 29th and 30th. The following subjects will be discussed:

Anesthesia, Extraction, Operative Technic, Prosthetic Technic, Crown and Bridge Technic, Orthodontia Technic, Porcelain Technic, Chemistry, Anatomy and Oral Surgery, Teaching in the Infirmary.

The main idea of the meeting will be "How should these subjects be presented to a dental student." This will be the most important dental meeting of the year, especially for teachers. As far as possible, every demonstrator, as well as the professors, should make an effort to be present.

W. E. WILMOTT, *Secy.*

RECENT PATENTS OF INTEREST TO DENTISTS.

- 800387—Matrix retainer, John Mills, Brantford, Canada.
- 800401—Tooth powder bottle, Mark T. Rounds, South Portland, Maine.
- 800498—Dental waste cotton receiver, Lyman L. Sheffield, Toledo, Ohio.
- 800193—Making shell gold crowns for teeth, Samuel E. Wilhelm, Sac City, Iowa.
- 801056—Dental matrix, Fredrik E. Andersen, Red Wing, Minn.
- 800787—Holder for toothpicks, Eduard Bergmann, Vienna, Austria-Hungary.
- 800981—Air blast attachment for dental engines, James W. Buchanan, Savannah, Ga.
- 801215—Dental engine attachment, Franklin O. Cates, St. Louis, Mo.
- 801840—Mouth prop, Joseph B. Besant, Saranac Lake, N. Y.
- 801841—Mouth prop, Joseph B. Besant, Saranac Lake, N. Y.
- 802099—Dentifrice, Eustace H. Gane, New York.
- 801911—Artificial teeth, Carl Rauhe, Dusseldorf, Germany.

Copies of above patents may be obtained for ten cents each by addressing John A. Saul, solicitor of patents, Fendall building, Washington, D. C.

SPECIAL NOTICE.

The new law governing "the practice of dental surgery and dentistry in the State of Illinois, and to repeal an act therein named," went into force July 1, 1905. Section 6, in part, reads as follows: "And it is hereby provided further, that every person who engages in the practice of dentistry or dental surgery in this state, shall cause his or her license to be registered with the county clerk before beginning the practice of dentistry in said county. *and to be, at all times, displayed in a conspicuous place*, in his or her office wherein he or she shall practice such profession, and shall further, whenever requested, exhibit such license to any of the members of the said board or its authorized agent."

Under the act of 1881, Section 4 reads as follows: "It shall be the duty of every person who is engaged in the practice of dentistry in this State, within six months of the date of the passage of this act, to cause his or her name and residence or place of business to be registered on the books of said board of examiners, who shall keep a book for that purpose;

and every person who shall register with said board as a practitioner of dentistry may continue to practice the same as such, without incurring any of the liabilities or penalties provided in this act." There are between seven and eight hundred persons who duly registered their names with the board as practitioners of dentistry within the specified time required by the act of 1881, and but very few out of this number have anything to show that they individually complied with the law, other than what appears on the book of registration now in the hands of the present secretary of the board.

At a special meeting of the Illinois State Board of Dental Examiners held in Springfield, September 7, 1905, a resolution was passed empowering the secretary to have prepared and printed a suitable certificate, which will be properly filled out and signed by the president and secretary, showing date of registration. The certificates are now ready to be sent to all who are entitled to them.

Whoever may chance to see this notice and will make it known by sending in their full name and correct address to the undersigned will in due course of time receive the document by mail. There will be no expenses attached to the distribution of the certificates.

J. G. REID, D. D. S., *Secretary*,
1204 Trude Bldg., Chicago, Ill.



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No. 12

PORCELAIN INLAYS.*

BY C. H. FARRAND, D. D. S., LA CROSSE, WIS.

In presenting this subject to the dental profession, I believe I have a fair realization of the possibilities and limitations of the porcelain inlay as a factor in the saving of teeth. I have not come to this realization through reading or through hearsay, but base what I have to say upon carefully made experiments and upon the practical use of the inlay in every-day practice. My object is to give encouragement to those among you who have become discouraged in the use of porcelain or to others who have felt that the work presented too many difficulties for them to undertake or who have allowed the press of every-day office work to crowd out this most useful branch of the dental art. To those present who have become expert in the use of porcelain this paper will have little of interest, and I beg their patient toleration of its reading.

I feel that too much of what has been written on the subject of porcelain inlays has had a tendency to throw a cloud of mystery around the subject and that the average, every-day practitioner who has an honest desire to serve his patients well, feels that it is a branch of work that must of necessity stand apart from every-day practice. I hope to help dispel this mystery that has been thrown around the work and present it in the simplicity which I believe to be its due.

The making of a porcelain inlay is, in itself, a comparatively simple operation. I say comparatively, and this I believe to be a fact. When you stop to consider the amount of time and energy spent, and the hours of toil exerted in learning to put in an ordinary gold filling, the building of a porcelain inlay becomes a comparatively simple matter. Especially is this true at the present time when all

*Read before the Wisconsin State Dental Society, Oshkosh, July, 1905.

things have been working toward a simplification of the art. Five years ago, when I first became interested in this class of work, it was hard, even at that late date, to procure either apparatus or porcelain that was at all adapted to the work. In this short period of five years there have been such rapid strides made in both apparatus and material that, so far as these factors have to do with the subject, there is no excuse for even the most humble practitioner in our most rural districts not taking up with this work. It has been reduced to a simple matter of technique, which patience upon the part of the operator will readily master.

In the matter of technique there are two methods generally employed. The first is perhaps the one most generally used and consists in burnishing a metal matrix into the cavity and into this the porcelain is subsequently fused. This method, although appealing to the average operator as the easiest and quickest, I have good reason to believe the less satisfactory of the two. I will admit that in the clinic room it is the most spectacular and in the hands of some operators it seems to be all that is claimed for it, but with the average practitioner I believe that better results can be obtained by swaging. This is true because, first, the thickness of the metal matrix is done away with, and, second, because a form of cavity preparation can be used into which it is impossible to burnish a metal matrix; third, it allows one to dismiss his patient and take as much time as he may choose to complete his work. This is a great point for the beginner, who is otherwise certain to be embarrassed by failures in the presence of his patient. Lastly, this method gives one the advantage of making as many inlays as he may see fit from the same die, using a variety of shades. From these he can select the one best adapted to the case. In addition to these points, if we consider that the swage method insures a joint which, if all details are carried out, is practically imperceptible, I believe we shall be forced to agree that to the unbiased mind it is by far the superior method.

CAVITY PREPARATION.

In presenting the methods I employ in my work, I shall touch upon cavity preparation merely to say that I believe a cavity so formed as to allow of a large body of porcelain, well locked in, and with the walls at all points perpendicular to the surface of the tooth, is absolutely necessary to perfect results. To go into details on this sub-

ject would take more time than is permissible in a paper of this kind. I shall therefore pass at once to

TAKING OF IMPRESSION AND FORMATION OF THE MATRIX.

After a cavity is prepared make a mix of cement which can be conveniently handled in the fingers. Moisten the fingers slightly to prevent the possibility of adhering and thoroughly knead the cement mass between the thumb and fingers. This will expel any air bubbles which may have become incorporated into the cement mass and will thus insure a sharp, clean impression, something which is not possible where the cement has been luted by some foreign substance. Before introducing the cement into the cavity, wash the latter with warm water, but do not dry it out; a little moisture is absolutely necessary to facilitate the removal of the impression. If a proximal cavity, a metal matrix should be introduced between the teeth, and the cement forced into the cavity from the direction in which it is to be removed. The matrix should then be turned back over the cement and held firmly in place until the cement has sufficiently set to permit of its removal. The use of the matrix insures even pressure over the entire cavity, thereby insuring a clean, dense impression.

The cement should not be allowed to remain until it becomes too hard or you will find difficulty in its removal. A drop of water upon the cement just prior to its removal will greatly facilitate the process.

After you have secured your impression, it should be reinforced by the addition of cement of another color. This will support frail margins which would otherwise break down in the swaging process. If your cement impression should contain any free margins they can be perfectly reproduced by adding a little paraffine to the impression on the surface next the cavity. This will prevent the reinforcement from encroaching upon the face of the impression and will mark perfectly the outline of the cavity.

After the cement reinforcement is sufficiently hardened the whole should be invested in modelling compound in a suitably formed die-cup. The die cups in use by myself, together with the balance of the appliances necessary for swaging the matrix, are the production of Dr. A. E. Peck, of Minneapolis, and I may say in passing that I believe credit is due Dr. Peck for perfecting and simplifying a system for the making of porcelain inlays which, to my mind, is superior to any other system in use at the present time. In the preparation of

this paper I have not hesitated to borrow from Dr. Peck's ideas and I desire to give him due credit for his assistance.

Before investing in the die cup, any portions of the reinforcement which might interfere with the swaging of the matrix should be carefully removed. Care should be taken in investing so that when the counterdie is formed there will be no difficulty in separating. Having the impression thoroughly invested, a piece of platinum one one-thousandth of an inch in thickness should be thoroughly annealed and, with the aid of the fingers and specially formed instruments, be approximated to the surface of the impression. The whole should then be transferred to the die cup receptacle and swaged thoroughly to place with moldine and a suitably formed plunger. Remove the die cup and break the moldine away from the matrix, then burnish out all folds and return to the die cup receptacle for a second swaging. This time, instead of the moldine, use modelling compound, confining it in a second die cup inverted over the matrix in the die cup receptacle and while warm force it down upon the impression vigorously with the plunger, aided by the mallet. This gives you a modelling compound counter-die of the impression. With your knife trim away the modelling compound which comes in immediate contact with the matrix. After swaging once more with the moldine, return the die cup to the receptacle with the matrix in place; now make a small mix of cement or of especially constructed quick-setting alloy. Force this into the modelling compound counter-die, which you have previously enlarged, next to the impression, and drive vigorously home. After sufficient time has elapsed to permit of thorough setting, remove from the receptacle and separate. By this method you will find that you have a perfect reproduction of the impression with the thickness of the matrix intervening, and a perfect counter-die in which you can reswage your matrix after every bake or as often as you may deem necessary to produce perfect results. In the fusing of the inlay I am in the habit of returning it after each baking, care being taken not to encroach upon the margins of the matrix until the last bake. At this time the matrix has become so thoroughly stiffened that there is no longer any danger of its changing form in the furnace.

PORCELAIN.

It is not my purpose in this paper to advocate the use of any particular make of porcelain, or to take a stand for the exclusive use

of either the high or low fusing bodies. I have used most of the entire list of bodies, from the highest fusing to the lowest, and believe that the successful operator will throw away his prejudice toward any one class of bodies and, by selecting from the entire group those which in his judgment come nearest to fitting the case in hand, gain results which are well nigh impossible when one adheres exclusively to any one make. In the beginning I was in the habit of using the highest fusing porcelains to be procured, believing that in this way I was securing the greatest amount of strength. My experience has taught me, however, that the low fusing bodies give all the strength necessary in every class of cavity. They fuse with less porosity, are not so hard on your furnace, and are the most easily handled, consequently at the present time I prefer them to the high fusing bodies with perhaps a few exceptions which I will speak of in the next section.

COLOR.

In the matter of color you will perhaps meet with more discouragements than in any other factor with which you have to do in the making of a porcelain inlay. In introducing the inlay to your practice, do not assure your patients that you can put in a filling that will look exactly like the natural tooth and that can not be seen, for you can not do so except in cases where you have been so fortunate as to have had a lucky accident, and where your perfect results are in no wise due to your skill. There are too many forces at work which you must be able to overcome to insure success in every case, and the least you can expect to do is to have your inlays pass unnoticed by the casual observer. If you attain this degree of perfection you are doing as much as, if not more, than the expert practitioner. It is a notable fact that the majority of inlays put in for clinical purposes are shown up in the cavity before being cemented. The result may be apparently perfect, but the addition of cement will in most cases tell a different story. If we had a transparent cement these apparent results could be readily obtained with but little effort on the part of the operator. Any color he might select which would at all approximate the color of the tooth would become so modified by the reflection of light through it from the tooth proper that it would escape the closest scrutiny.

But we must do our best with the materials we have at hand, and by the use of good judgment and experience do away with the

bad features which they present. A difference in the character of the high fusing and low fusing porcelains becomes a factor here. The high fusing porcelain is a more translucent body than the low fusing. This makes it more desirable for teeth whose translucence is marked. As a general rule, also, the low fusing porcelain is more desirable for labial cavities where the greater denseness is accompanied by a more decided opaqueness.

Aside from this difference in porcelains two other features should be noted. First, we will gain much by using as large a body of porcelain as possible. Second, by using a white cement we will have a less number of light rays absorbed than is possible by the use of any colored cement, and if we adhere strictly to a cement of one color we shall become more expert in the use of our porcelains through always obtaining the same results. If these two points are carefully observed, I believe the operator will be materially aided in the production of an inlay of good color.

In my selection of colors for any one case I find that I gain the best results by the use of two fundamental colors; one to match the color of the dentine, the other the color of the incisal edge of the tooth. It may be necessary in procuring these two to mix other colors which you may have at hand, but in the actual building of the inlay the two will give results as good as is possible to obtain. In building up your porcelain in your matrix reproduce as accurately as possible the color and especially the form of the dentine as it was originally. This I believe to be the most important step in gaining color. If the porcelain representing the dentine is of the same shape and color as the original dentine you have a reflection of light rays which is exactly uniform over the whole surface of both tooth and inlay, and if it were not for the intervening layer of cement, which of necessity absorbs certain of these rays, your results would be perfect.

These are only a few points which I think will aid you in arriving at the best results. It is impossible for me or any other man to teach you color schemes any more than it is possible for an artist to tell you how to mix the colors he spreads upon his canvas. There are some things which instinct, patience and experience must teach you, and this is one of them.

SETTING AND FINISHING.

With the system under consideration, it is not necessary to use any care in carrying your porcelain up to the margins. On the contrary, better results are obtained if, in the final baking, the margins are generously covered with porcelain. Before stripping the matrix, carry your inlay to the laboratory lathe and finish down roughly. This can readily be done with a carborundum stone, followed by a Hindoo stone. You can grind your porcelain almost to a finish without danger of encroaching on your margins, the matrix acting as a guide to show you how far it is possible for you to go. After grinding as much as necessary, strip the matrix from the back of the inlay by grasping its edges with a pair of pliers, pulling it from the margin toward the center. This will insure a perfect removal of the matrix without danger of chipping the porcelain. Now carry your inlay to the mouth and insert it into the cavity for a trial fitting. If you find that everything has come along as you might well expect you are ready to set your inlay permanently. I believe that the etching of the inlay with acid is the easiest and neatest way of gaining adhesion. It is my practice to invert the inlay on the bracket and just touch the back with a drop of hydrofluoric acid. If you do not use too much acid it will not flow past the margins of the inlay, and after a period of five or ten minutes, if your acid is good, you will find the surface sufficiently roughened to insure good adhesion of the cement. After thoroughly rinsing the inlay to wash off all traces of the acid, it is ready for setting. I do not believe it is necessary in any case to use the rubber dam in the setting of a porcelain inlay. In fact, I believe that more pleasing results are obtained by not doing so. When the rubber dam is used the temptation is to dry the tooth beyond the point necessary. When this is done it always causes a wide variation of color between the inlay and the tooth immediately after the setting of the inlay. This, although causing no permanent harm, is disconcerting to the operator as well as disappointing to the patient. It is my practice to guard the field of operation well with rolls of absorbent cotton, then dry the cavity only enough to expel all moisture from the surface. In no wise do I believe it necessary or practical, especially with the cements used by myself, to dry the tooth to the extent of desiccation. My assistant has in the meantime mixed my cement to a creamy consistency and I immediately cover all surfaces

of the cavity with a generous layer. Into this I force my inlay, using considerable pressure and retaining it for the space of three or four minutes. If it is a proximal filling, pressure may be exerted upon the inlay by forcing a wedge in between it and the opposing tooth. After the lapse of ten or fifteen minutes the cement is sufficiently hard to permit of immediate finishing. This I do in much the same manner as we finish an ordinary gold filling. If there is much surplus of porcelain at any one point I finish this down with a gem stone. After this I follow with strips of different grit and finish with a wood point and pumice or with fine Arkansas stones. This in brief is the plan I have used in the construction of porcelain inlays. •

In conclusion I wish to add a few words, that the stand I have taken in this paper may be thoroughly understood. As I said in the beginning, my object is to promote the use of porcelain and to encourage those who have become disheartened in its use. So far as methods are concerned, I have only given to you the one that has been most successful in my hands and the one which, to me, seems mechanically correct. If other means seem better to you they are the ones for you to take up. We are working for the same end, and if we gain results which are satisfactory, the method by which we gain them counts for little. I think in many instances a great deal of harm has been done (and porcelain has fallen into consequent disfavor) by the rash use it has been put to by men before they were competent to handle the work. As Dr. Head, of Philadelphia, expresses it, "Porcelain is very frank and if you have a failure it is very quick to let you know about it." Consequently I believe that a man who begins working in porcelain must be extremely cautious as he proceeds. I would select my cavities at the beginning with the utmost care, and I would not think of placing a filling of any description in the mouth until I had come to that state of perfection in my laboratory where I could be reasonably sure of making a good fitting inlay. The man who attempts the insertion of inlays, without paying some attention to fundamental principles, and who is not willing to devote enough time and attention to these necessary points, can not expect to be successful in a class of work in which success depends upon the closest attention to detail. For a man who has never attempted the work at all to rush madly in placing fillings in all

cavities, is to invite failure for himself and to bring ridicule and derision upon the work. Therefore, I counsel cautiousness and conservativeness until you have so familiarized yourself with the work that you may, in some sense, comprehend what you can and what you can not do, when you commence to put porcelain into actual use.

Experience has proven conclusively to me the following: The porcelain inlay, well put in, is a permanent fixture and decay does not recur. It is esthetic in the extreme and it is not affected by thermal changes. These points are sufficient, if you are energetic and progressive, to cause you to pause and consider why you have not already taken up the work. The material is at hand and the time is ripe. In the language of the street, the rest is up to you.

A FEW THOUGHTS ON DENTAL CARIES AND ITS RATIONAL TREATMENT.

BY HENRY L. BANZHAF, A. B., D. D. S., MILWAUKEE, WIS.

It is not many years ago since the rank and file of dentists throughout the world quite generally believed that work along scientific lines was "love's labor lost," in so far as it related to the success of daily office practice. Men have prided themselves in the fact that they belonged to the practical class of dentists and offered neither sympathy nor encouragement to the earnest, plodding student of science who was breaking new ground and was laying the foundation for future scientific and practical attainments. To make this possible it required years of self-denial, years of persistent effort by the men we now recognize as pioneers in this work. Even today the work which is being carried on by our dental scientists is not appreciated as it should be. That there has been a change for the better in this direction must be conceded by all who have been reasonably close observers. Recognizing the work of the best minds in our profession, it is with pride and confidence that I boldly assert that true success in dental practice today largely depends upon an understanding of the underlying scientific principles by the indi-

vidual who engages in its practice. Research along the lines of dental caries was commonly branded as scientific rubbish and of no value in its application to operative procedures. Today we know that the curative action of all filling operations depends largely upon our understanding of the nature and progress of dental caries. The great work of Miller and Black in definitely establishing fundamental scientific principles has proved an incentive to others who are pursuing scientific investigations. It is not my purpose at this time to go at all extensively into the etiology of this disease. I hope, however, to establish my argument upon the chemical and bacteriological theory of decay of the teeth with respect to the practical lessons we may learn in connection with the preparation of cavities. In explaining the progress of caries I shall endeavor to confine myself to a plain statement of facts, especially noting physical changes which take place. Careful study and observation has proved that there exists a great variation in the manner in which food products lodge upon the teeth. That is, some foods become adherent to the surfaces of the teeth commonly classified as areas of liability more readily than they do upon others. In a paper read before the Southern Wisconsin Dental Society recently I discussed this subject more fully. Therefore I shall merely mention what was then dealt with in greater detail. When foods of a glutinous and doughy character lodge upon the surfaces of the teeth the first manifestations which we recognize as leading to the destruction of the enamel is a process of fermentation, the development of acids which act upon the enamel with decalcifying results, the diffusion of the acids and the invasion of microörganisms into the dentine. The visible effect upon the enamel is a change of color to a white, gray or brown at the point of attack, and by opacity and roughness of the enamel surface. What actually takes place is the dissolution of the lime salts from the hard tissues of the tooth. In caries of enamel the elements composing this tissue must first be dissolved. In its action the acid acts more rapidly upon the cement substance which binds the enamel rods together. Dissolution of the enamel rods themselves closely follows, and as soon as this is accomplished, there being no basic substance in the enamel, the initial enamel penetration is made and the cavity is formed. Caries of the dentine differs from caries of enamel in several important particulars. The first difference we note is a

physical one. There is in the dentine an organic matrix which is entirely absent in enamel. Dissolving the lime salts out of the dentine does not immediately form a cavity, nor does it change its histological form. The progress of destruction is, therefore, much slower in dentine than it is in enamel, due to the resistance offered by the organic substance contained within the dentine. The bacterial ferment in its action upon the organic substance of the dentine probably forms compounds which also are factors in the resistance offered by a tooth to the progress of decay. Microorganisms do not enter the enamel, because of the histological character of that tissue, it being entirely lacking in natural openings into which the bacteria may enter and multiply. They merely attach themselves to the enamel surface, there producing an acid which dissolves the lime salts from the enamel. In the destruction of the dentine the bacterial ferment acts in a similar manner, so far as the dissolution of the lime salts is concerned, supplemented, however, by the invasion of microorganisms into the dentinal tubules. Into these tubules the interglobular spaces and in fact into the various imperfections which may exist in the dentine of the particular tooth affected, the microorganisms grow. This growth of the microorganisms in the natural openings is not one of mobility, but rather one of multiplicity in development. From this time forward the destruction of the dentine is probably a digestive process of the bacterial ferment. Such is the nature and progress of dental caries expressed in its simplest form. The question of the application of this knowledge to the preparation of cavities in filling operations is equally simple. Let us see what deductions we may safely draw.

In order to facilitate an intelligent study of this subject I shall consider, first, pit and fissure cavities, and, second, smooth surface cavities.

The first class of cavities occur upon the occlusal surface of molars and bicuspid, the lingual surface of upper incisors and the occlusal two-thirds of buccal and lingual surfaces of the molars. These, as we know, are grooved surfaces, and, except for the deeper grooves, pits or fissures are kept smooth and clean as a result of friction in mastication. It is a fact based upon clinical observation that such surfaces never decay unless there is a structural defect in the enamel, which invites the lodgment of food, retains it, and as

a result of the fermentation which follows we have decay. In preparing these cavities for fillings not much extended cutting is needed, because the enamel surface which surrounds the cavity is kept mechanically clean. It is not infrequent, however, that a pit and fissure cavity may include a considerable area in the dentine without destroying much superficial enamel. This is undoubtedly due to the fact that this smooth polished surface is practically immune from decay because it is kept clean, and but for the enamel fault referred to would remain so. The requirements, therefore, are simple and consist in cutting away all unsupported enamel walls, the removal of decay, the cutting out of deep grooves to points where a smooth finish can be made, and the proper beveling of margins to admit of the perfect finishing of the filling. The importance of the enamel margin terminating at a point where the surface is smooth and exposed to friction is of the utmost importance. For, unless this provision is carried out, a condition is created favorable for the recurrence of decay around the filling.

In studying smooth surface cavities we find that the beginning of decay is not due to imperfect enamel formation, as is always the case in the pit and fissure cavity. It, therefore, follows that as the beginning of decay differs in its origin, the underlying principles which govern the treatment of smooth surface cavities must vary in like manner.

For example, we find a cavity on the buccal surface of a molar near the free margin of the gum. Here we have to deal with decay which occurs in a region which is not kept clean by friction in mastication. The progress of decay is most rapid in the center of this unclean region, and diminishes in intensity as we approach surfaces which are more nearly clean.

The natural deduction, therefore, is that where there is no pit, no fissure, no fault in the enamel, that the surface which is continually unclean is most susceptible to decay. Exceptions to this rule are only noted in cases of uncommon resistance in the enamel of different teeth which this tissue offers to the ravages of decay. That there exists a difference in the resisting qualities of enamel of teeth even in the same mouth seems to be a clinical fact concurred in by many operators. The preparation of these cavities is more or less a matter of judgment with each individual operator. The object in

view, of course, is the prevention of recurrence of decay, and success in the object sought will be in direct proportion to the correctness of the judgment which maps out a line of procedure. In determining the outline of the cavity, the susceptibility and age of the patient should receive especial consideration. We must carefully study the conditions surrounding each case, with regard to this region of uncleanness, and which varies materially in different patients, always keeping in mind that in order to effect a permanent cure the removal of the conditions which led to the beginning of decay should be accomplished. Having decided this much, the necessity for removing all of the enamel and dentine which has been infected becomes at once apparent.

In preparing a buccal cavity for a metal filling the occlusal margin of the cavity should be as near the occlusal as the requirements for having the surface, which shall be kept clean by friction, may demand. The gingival enamel margin should be laid for enough under the free margin of the gum, in order that a reasonable absorption of the latter shall insure it against exposure. The mesial and distal margins should be cut well toward the angles of the tooth, but not beyond this line, for the surface of the tooth approaching nearest the angle is the least liable to decay. This rule applies to all smooth surface cavities, and is one of the most important considerations relating to cavity preparation for permanent filling operations.

In studying proximal cavities in incisors and cuspids, it is important that we keep in mind the fact that clean surfaces of teeth are not liable to infection and that wherever we find decay on proximal surfaces of teeth it is always because the surface affected was not kept clean. Moreover, decay does not begin on a surface which is covered by healthy gum tissue, and when found there is always due to neglect in treating the initial point of enamel penetration.

The conditions governing each individual case must, of course, always guide the operator. In a patient who has passed the age of forty, liability to decay decreases with advancing years. These are conditions which may be classed as exceptional and should be treated accordingly. By this I mean that in these cases extensive cutting rootwise is not indicated.

Any operator of average experience who will carefully study the subject of liability of decay, and who will apply the rules of ordinary common sense, will have no difficulty in recognizing these exceptions and thus give his patient the benefit of a rational treatment.

In securing the outline of proximal cavities in incisors and cuspids, the gingival margin should usually be well under the free margin of the gum. This requirement, which, under normal conditions in youth and even in middle age, is quite easily accomplished, seems to be a bugbear to many. It is urged that this involves too much destruction of tooth structure; that the gum septum in the interproximal space, when it approaches the contact point, is wounded and lacerated, both in the preparation as well as in finishing of the filling to such an extent that premature atrophy of the gum tissue is the result. In answer to these assertions I am bound to say that the first objection is not a valid one, because when the gum septum occupies its normal position in the interproximal space during the period of high susceptibility not much cutting rootwise is required in order to safely place the gingival enamel margin where it becomes immune from recurrence of decay. The second objection can be overcome more easily. All that is required to protect the gum tissue from laceration is a little painstaking care and sufficient time in which to press the gum tissue away temporarily from the surface requiring treatment. Gutta percha packed into the cavity and extended across the interproximal space may be used temporarily for this purpose, provided always that sufficient room be given the gum tissue to prevent great absorption. Recurrence of decay in this class of cavities usually occurs at the labio-gingival and the linguo-gingival angles. The cause of this is not wholly bacteriological, but is likewise due to the fact that adaptation of the filling material is here apt to be the least perfect.

As a precautionary measure the cavity should be broadened at these points and the angle formed by the gingival and the axial wall left nearly square. The enamel margins may be slightly rounded for æsthetic reasons and also for the purpose of securing better adaptation of the filling. The cutting away of the labial surface of incisors and cuspids should never be tolerated unless extensive destruction of tooth structure makes this necessary, for when the cavity is

extended beyond the angle we again approach a surface more liable to decay, because it is kept clean with more difficulty.

The unnecessary display of gold should, of course, be avoided if possible, and to this end it is suggested that the separation ordinarily required be increased, permitting the building out of a more prominent point of contact. My own observation has convinced me that not enough attention is paid to the form to be given to this point. It should be small and round, and the gold condensed so thoroughly that it is not readily worn flat from the movement of the teeth in the arch during the process of mastication. Furthermore, the most perfect gold contact point is easily ruined by the inadvertent use of disks and strips. Therefore I do not hesitate to say that for correctness of contact form, accuracy of placing the same and permanency in maintaining it, porcelain as a filling material is superior to gold. The permanency of the contact point may also be considered a prophylactic necessity, as it relates to the health of the gum tissue which fills the interproximal space and simplifies the requirement of always freeing the margins of the filling from near contact with the adjacent tooth. Increasing the width of the labial and lingual embrasures facilitates the self-cleansing process by exposing the enamel margin beyond the filling to greater friction during mastication. In cases where the anterior six teeth are crowded to such an extent that the wider space is hard to obtain without the danger of fracturing the enamel or inducing a possible serious inflammation of the periodontal membrane, more extended cutting labially or lingually is indicated. In these cases the filling should be made of porcelain, regardless of the labio-lingual diameter of the incisal edge.

Many of the rules which apply to cavity preparation in the preceding classes apply to proximal cavities in molars and bicuspids. In these teeth, as on all proximal surfaces, the region which is most liable to decay is gingivally of the contact point, and extends slightly on to the buccal and lingual surfaces, with a decided tendency root-wise at these angles. Whatever extension at the gingival toward the buccal and lingual is necessary must be carried out to the occlusal. In these teeth, with but few exceptions, proximal cavities must be extended to the occlusal surface, partly to give free access and partly to free the enamel from near contact with the adjacent tooth. Such extension of the cavity exposes the filling to occlusal stress, and this

brings us to a consideration of occlusal anchorage for retention. Many writers of wide reputation advocate universal occlusal anchorage for these fillings. A general application of this principle, I believe, is wrong and should be condemned. Much has been said and written upon stress in mastication, but it should be remembered that this stress in pounds is not the same at all points of occlusal surfaces of the teeth. In a paper published in the *Dental Summary* for June, 1904, Dr. R. J. Wenker says that "the majority of large proximal fillings having poor or no occlusal anchorage become dislodged or remain intact according to the strength of the buccal and lingual anchorage and according to whether they are mesial or distal fillings." This, it seems to me, expresses the pith of the entire proposition of occlusal anchorage.

In the upper jaw, large proximal fillings having poor lingual support become dislodged in a lingual direction. Mesial fillings having poor or no occlusal retention generally tip in a mesial direction, while distal fillings having no occlusal step and a strong lingual wall usually remain secure. In the lower jaw the exact reverse takes place; large proximal fillings having poor buccal support tip in a buccal direction. Distal fillings having a poor or no occlusal retention tip in a distal direction, but mesial fillings having no occlusal step and a strong buccal wall usually remain in position. The clinical observation of your essayist corroborates this point. In explanation of this behavior of proximal fillings of the posterior teeth I will invite your attention to the direction of the occlusal stress. If you will view the movement of the mandible from an anterior position the cusps will be seen to describe a triangle. The first part of the movement is a separation of the occlusal surfaces, "the releasing movement," the second part is in a buccal direction and may be styled the "position movement," and the third part of the triangle is formed by a movement in an upward and lingual direction back to the place of beginning. The latter, the most important movement in this connection, is the one in which the crushing of the food and the dislodgment of fillings takes place. In viewing this movement, as previously stated, from an anterior position we see the stress applied in a lingual and upper direction against the upper teeth and in a buccal and downward direction in lower teeth. On the other hand if we examine this movement from a buccal position it will

be seen that the teeth describe the section of a circle. The center of the circle is located at the fulcrum, about fifteen millimeters below the articular surface of the condyle. Therefore the general direction of the crushing stress, as seen from this side, is mesially against the lower teeth. It is this direction of the stress that dislodges mesial upper fillings in a mesial direction and distal lower fillings in a distal direction. This statement is strengthened by the fact that the lower teeth glide slightly forward during the crushing act. The argument may be advanced that as each cusp is wedge-shaped and interlocked between the opposing cusps, the direction of the crushing force would necessarily be at right angles to their inclined planes. While it is true that much force is exerted in these directions when the occlusal surfaces are in perfect apposition, it is not true during the moving process in the act of crushing food. The fact is that the longer and more pointed the cusps are the greater is the danger of the dislodgment of mesial upper and distal lower filling. It has been my practice for years to grind off decidedly long and sharp cusps which penetrate too deeply into opposing fillings and which, no doubt, are a menace to the security and permanence of this class of operations. The greatest stress is exerted against the distal inclines of upper and mesial inclines of lower cusps, with the tendency of driving distal upper and mesial lower fillings into their cavities. The least stress is exerted against the mesial inclines of upper and the distal inclines of lower cusps, and still mesial upper and distal lower fillings fail most frequently. Therefore I believe that dislodgment takes place by catching hard particles in our food materials during the crushing act.

My object in bringing this matter so prominently before you is to point out the fact that this danger in the crushing stress does not apply to all proximal fillings, and to urge a more conservative treatment of this class of cavities.

If the buccal and lingual walls are strong, sufficient anchorage can be gained in these walls to insure the safety of these fillings. By this I mean that I would not cut a step on the occlusal surface in any distal upper or mesial lower cavity having strong buccal and lingual walls.

In closing I desire merely to allude to the form that should be given these proximal fillings. The original form of the tooth pro-

viding the form was normal, should be restored. It is of the greatest importance that the full diameter of the crown of the tooth from the mesial to the distal be preserved. This rule applies to all teeth requiring restoration. Unless this is done the interproximal space at once becomes contracted, resulting in the tipping of the teeth, a condition always deplorable on account of the difficulty with which the interproximal spaces are kept free from the lodgment of food.

THE TECHNIQUE OF PORCELAIN CROWNS.*

BY DR. F. H. BERRY, MILWAUKEE, WIS.

Along hand in hand with operative work goes the porcelain art in prosthetic work. I want to say that I believe the time will come when all crown work, and a good share of the bridge work, will be done with porcelain.

I am not going to lay down anything new in the line of technique in porcelain work, but I want to pick out some things that have come to me as important points in the construction of crown work. I will not attempt to take up bridge work.

In the first place, why do we advocate porcelain? It is stronger in certain cases, if we have a suitable bite. We have to discriminate as to where we will use a porcelain crown, the same as in determining whether we will use a porcelain filling. If you have a suitable case I believe you get a stronger tooth with a carefully baked back than with a gold back and a soldered facing. The soldered crown is limited to the strength of the two little pins holding the backing and facing together with solder; while in a porcelain crown you get the strength of the porcelain that is actually fused to the back of the facing. In the next place we get a translucency that we can not get with a crown that is backed. We get more "life" or natural appearance to the facing than if it is backed up with metal, no matter whether platinum or gold. In the next place we get a more cleanly crown. We know that a porcelain inlay up under the free margin of the

*Read before the Southern Wisconsin Dental Association, Racine, May, 1905.

gum will preserve the tooth and keep clean, whereas a gold filling will have an accumulation of deposit. We have a more cleanly filling and a more cleanly crown made of porcelain than of gold. In the next place, from an esthetic standpoint, we get nearer to a reproduction of the natural appearance of the tooth than we get by gold work.

The first thing to consider will be the preparation of the root. I do not need to dwell very much on that, except that I would urge that all porcelain work be done more thoroughly than gold work. I do not mean that gold work can be properly done in a slovenly way, but of course poor work will show up more on porcelain than on gold. Why? Gold being malleable we can burnish it, and adapt it to the end of the root after the crown is made, a thing we can not do after a porcelain crown is made. To facilitate the preparation of the root, and avoid as much pain as we can to the patient, it is better not to cut off the root down to the gum margin at first—that is, if we have enough material—but prepare the root, leaving it as we illustrate here (indicating); this being the gum line. It is easier to strip off the enamel and straighten up our bevel than when we cut down close to or under the edge of the gum. Then after we have prepared our root and fitted a band, the next thing is to level off the labial or buccal edge of that root and then fit our floor so that it is attached only throughout the floor proper, not with the bevel. Then put it back on the root, and with a blunt instrument bend this up and conform it to the root, and then remove it and tack it with solder. I want to urge the proper metal construction, because I think improper metal construction leads to discouragement and the condemning of porcelain work. If you are going to use porcelain work at all—I am going to say this from my standpoint—I would always use the highest fusing porcelain we can get. I begun at the bottom with low fusing, with Brewster's and White's and so on, but finally used a good deal of tooth body that comes from crushing porcelain teeth themselves. Next I would urge the use of platinum solder; what is known as the 25 per cent platinum solder. I do not mean to say that the gold solder will not do in some parts of crown work, but when we attach the floor to the band, and when we attach the dowel to the floor, it is better to use platinum solder, especially if using a high fusing body. Another point I

would make is the proper fitting and grinding of the facing to the band. In the first place, I would urge that the labial edge of the band be rounded as much as possible; because it is a fact that porcelain will not bake over a sharp edge, and stay there. It is better to round off all the corners. I would not advocate the grinding of the facing too accurately. I would suggest that the facing stand away from this rounded portion so that new porcelain can be worked in between the facing and the band. That gives us a chance to heap the porcelain up on the front of the band, and that porcelain has a connection with the inner porcelain, so that the front piece can not very well shell off without carrying some bigger part of the porcelain with it.

The next thing to consider is the attachment of the facing to the floor. If the bite is such that we can run the dowel up above the floor a little we get a stronger dowel as regards the possibility of the crown tipping on the dowel. If not, then we have to proceed differently. We can either grind the dowel down as far as we need for the bite, and then bend the pins down to it, or cut the dowel off entirely. If we do that it is well to solder a little piece of 14 gauge platinum wire across the floor. The floor is made of 30, 31 or 32 gauge and it has not much rigidity between the dowel and the floor. If we put a cross-bar on we strengthen it in two ways. The porcelain now will run under the circle of the wire, is keyed to the floor, and we get a stronger attachment between the porcelain and the floor than we had in this case (referring to illustration).

Now, another point is not to bring the porcelain on the labial side of the crown, down to the band in a feathered edge, but bring it straight down. In doing that we get a stronger porcelain right at the point where the greatest strain of occlusion occurs. If we bring this down to a feathered edge the patient will come back and complain of a roughness. There is a little edge chipped off, and there is no remedy. We can not get to it, or do anything except to dress it down with a sandpaper disc. In this method, it can not occur. We get more porcelain at this point, and have a stronger occlusal surface. Now, we all know that when we bite on our bicuspid and cuspid teeth the strain is all on the lingual side of the root. Platinum and iridium, but platinum especially, while it seems to be stiff and strong, has a tendency to "creep," like pure gold, if there is a continual strain

on it. If we do not guard against that in some way, on a cuspid, or particularly a bicuspid, we find that we will have a stretching of the lingual side of the band after the crown is made and in that way have a bending of the dowel, perhaps. Later on decay will encroach where this band has loosened, and we will have a failure; so I would advocate the thickening of the band around the lingual side, projecting the floor out and filling in, as we will show in another drawing, with platinum solder; because platinum solder will go through the furnace and retain its position where gold solder would be absorbed or spread on the platinum while in a fused condition. That same plan can be carried out in a molar tooth.

The next thing of importance to look after is the shape of the dowel. If you put in a round, tapering dowel, it will come down straight, and the end of the dowel will fill up what is going to be the weakest part of that crown; but if you take the end of the dowel on an anvil and flatten it out you spread it, so that it is a dove-tail. Then if you will give it a little bend backward, so as to get it back into the lingual cusp it will greatly strengthen the crown, throwing it into the largest bulk of porcelain. The crown will be even stronger that way than if you cut the dowel off short and brought the pins up and soldered to the short dowel.

You can readily understand that it is impossible in a short talk to cover very much of the technique of porcelain work. I am sorry to say there is very little concise literature on porcelain work. You have to take your chance. After getting to work in porcelain some will go one route and some another. I have tried to bring together some of the vital points in my technique of crown construction, and make as short a talk of it as possible.

It is hardly becoming, I think, at this time to discuss the merits of bands and partial bands. I think we have all decided in our own minds that a crown without a band is far more acceptable to the gum tissue, looks better, and in many cases is just as strong as a banded crown. We will first take a half-way step and construct a crown with a partial band. There are several ways of doing that. There is also lately on the market a band that is, you may say, "ready made;" that is, an open face partial band; with dowel and all, made in one piece, that is adjustable. That makes quite a good crown where you can use it. The best way to prepare the root is to prepare

it on a double bevel, because then we would get a strength that would take the labial or buccal strain. We can make that in one piece, or in two pieces. We can burnish our platinum floor and solder the partial band, or take a piece of platinum that is too large on the lingual side, and cut it in one or two places, and with the plugger and burnisher work that up over the lingual edge, and finally flow the platinum solder over it and make it as strong as though it was one entire piece of platinum. The grinding of the facing is a little different. I would let the cervical border of the facing fit exactly against the floor, while in the other case we let it stand out a little from the floor. Now, sometimes we get a tooth that is broken off lingually so short that we can not get a band on it, or for some other reason we don't care to put a band on it; but the preparation of the root, the double bevel of the root, ought to be the same in order to give the strength as regards the lingual and labial strain. The technical construction there is about the same, but I would urge this: Wherever you bend pins down through quite a distance, as illustrated there, I would not bend them down in their natural condition, but would take a file and notch part way through where they leave the porcelain. That would let them bend down easy, without straining the porcelain. After we have put on the first bake we have no further use for the pins. In fact, it would be a better crown if we had some way of getting them out of the crown after the first baking. I would bend those down flat against the facing, rather than strain the facing and bend them out, as is sometimes done.

The construction of porcelain crown work, as regards what I will call "ready-made crowns," does not differ very much from the technique of constructing the crown where we use a facing simply. We make our floor, and of course the dowel is attached to the crown; but the grinding of the crown to fit the floor should not be followed the same as in the other technique, allowing it to extend out and up, leaving the joint open as much as you can. You can then fill in and get a stronger veneer of porcelain in front than otherwise.

Now, a good deal of crown work is spoiled in the furnace. The technique of the metal part might be thorough and the placing of the porcelain on the crown; all up to that point might be right, until it goes into the furnace, and then the mistake is made of not having the proper supports during the first bake. You can readily see if we

construct the metal work for a crown that has no band, and we do not properly support that, that when it comes up to the fusing point of high fusing porcelain, all that metal construction is, I might say, of a dough-like consistency, and if that crown is heavier on one side than on the other it would sag, and the metal would go with it, and when it is finally fused we get a crown that does not stand right in relation to the dowel, and we have a misfit that we probably would lay to porcelain crown work, whereas the trouble has been that you have not properly supported the crown in the furnace. Where we have one that has the band entire we better support it at two or three points distant from the center, and in that way we will not have the collapse that we would have if we should use this support (indicating), and give the floor a chance to lop over, due to the heat of the furnace.

Now, with this crude effort, I hope I have said or done something that will help somebody to make porcelain crowns instead of gold crowns on the six anterior teeth at least. I think the time has come when the entire profession should look upon a shining gold crown on a front tooth with a sort of disgust, and when our patients come to us and say they want a gold crown we are inclined to talk it down, although we are afraid we will lose the patient. "If they have got their mind set on it," we say, "Why, let them have it." But when you come to be conscientious about your practice I think it is a good deal better advertisement to turn away the patient who wants a gold crown on a central than to put your sign on it and let it go away and hurt your practice. I make it a practice to cry down the putting of gold crowns on those anterior teeth. I think the time is coming when nothing will "go" with the public except a porcelain crown on those front teeth.

CARE OF THE DENTAL TUBULI UNDER FILLING MATERIAL.*

BY F. S. TRICKEY, D. D. S., FREEPORT, ILL.

It is not the purpose of this paper to make any suggestions in regard to cavity preparation, or to emphasize anew the necessity of correctly beveled and perfectly polished enamel margins, taking it for granted that these essentials are fully accepted by all practitioners who are enough alive to be in attendance at a dental convention. But to rest assured that the ideal has been accomplished for our patients, when the filling is completed with all enamel margins polished to a perfect surface (without a visible pit, even under the magnifier), is often a snare and a delusion.

How many times have we dismissed our patient with this nicely finished work, labeled it "a thing of beauty," and then at a later date been surprised to have convincingly revealed to us that it has not proven a "joy forever."

Have we fully understood all the sources of destruction to these monuments of our professional skill, or are there foes for us to fight, the presence of which we are unaware? In facing the many failures that come under our observation in daily practice it seems very reasonable to decide that there is real need for more improved methods.

The presence of the dark line so prevalent wherever cohesive gold or amalgam comes in direct contact with the dentine, leads us to question the continuance of such practice without some protest, and is certainly grave enough in its results to demand our most careful attention. Is not this conclusive evidence that these materials are incompatible with tooth structure when placed in this relation? I think this point is quite fully conceded by the dental profession in general.

If so, in the face of the extensive daily use of these materials in such relation, is it not time to begin to hope that some Saul of Tarsus may become thoroughly enough converted to stop, study into and solve this problem and show unto us a more excellent way?

*Read before the Southern Wisconsin Dental Association, Racine, May, 1905.

The constant investigations and new discoveries in both science and practice make it very aggressive on the part of any practitioner to declare flatly that his deductions are absolutely true.

The anatomy of the dentine of the tooth, however, reveals not only the possibility, but the probability, that a needed attention has been sadly neglected just before commencing the insertion of the permanent filling material. In cutting the tooth substance either with hand excavators or burrs driven by the engine, all dental operators are aware (and their patients are generally much more aware) that this part of the anatomy is very much alive.

Countless numbers of dental tubuli must be severed in the preparation of the cavity, and this living tissue is placed in contact with a filling material which makes harmonious existence impossible here until the struggle ends in a death or a destruction, the evidence of which is the dark line above mentioned.

We are all convinced beyond any doubt that this line of discoloration may be overcome. It has been proven to us by many a non-cohesive gold stopping, some that have done service for nearly half a century. We may not dub them artistic from our modern viewpoint, but no dark lines mar their margins and they continue to preserve the teeth with comfort to their possessor. It has been proven to us by gutta percha stoppings that have served long and faithfully in most inaccessible locations. It has been proven with fillings of tin, that have been carefully and judiciously inserted, and the eradication of the dark surrounding line has been most thoroughly demonstrated by the use of cement, and while we know it to be a very temporary filling, washing and dissolving out very rapidly, yet its margins are ever free from discoloration. It is one of the most, if not the most, compatible filling material that it has ever been the dentist's good fortune to use.

If it has none other than this one redeeming quality of compatibility that is not possessed by either cohesive gold or any of the alloys, is it not well worthy of our most considerate attention, as a cavity liner, to cover the dentinal surface and protect these live tissues from the harsher filling material? I contend that it is, especially so since it can be easily introduced and renders so perfectly in this position the very service for which we are in search.

Several years of careful experiment and observation have convinced me that the right quantity of cement mixed to a proper consistency, placed beneath gold foil in the cavity and subjected to a pressure sufficient to weld the gold, will so perfectly seal the dental tubuli that we may entirely prevent the black line of discoloration so prevalent between cohesive gold, and the tooth substance when the cavity is unlined.

Like results are just as easily and positively reached when used under an alloy, by carefully and thoroughly burnishing a small amount of the filling material over the entire dentinal surface of the previously cement lined cavity.

I believe the claim made by some operator that cement will prevent amalgam from shrinking away from the cavity wall is accounted for wholly on the theory that the thin cement lining so perfectly seals the dental tubuli that peace and harmony are permanently established.

The mistake that the inexperienced invariably make with cement in this relation is to use too great an amount. He can not believe that the small particle necessary to perfect work is sufficient for his purpose. In this connection I repeat from a previous paper in reference to my mode of operation.

I prepare all cavities the same as I would if no cement were used, not relying in the least measure on the cement anchorage to hold the finished filling in place. When all is in readiness for the filling, I mix the cement to such a consistency that a small particle of it will quite readily drop from a common nerve broach, and with this broach I carry it into the cavity. My reason for using an instrument as fine as a broach for this purpose is because the amount that clings to it is so small that I am enabled to carry it to the floor of the cavity without smearing the side walls.

With my broach (very large cavities for gold excepted) I now spread the small particle of cement over the entire dentinal surface of the cavity. I am now ready for the immediate insertion of either gold or alloy as preferred.

If for gold I usually place the proper sized pellet of unannealed foil in the cavity and press lightly to place with one of several pluggers, that I keep for this special work. I now place over the first pellet Watts Crystal gold and press all firmly home. I prefer

the foil immediately over the cement, because it does not readily tear under the crystal form when subjected to the pressure necessary to welding, thus the mixing of particles of the soft cement through the filling material is entirely obviated. As soon as enough crystal gold is built in to perfectly anchor the filling and insure firm and constant pressure on the cement lining, I carefully examine and remove any particle of cement that may possibly have squeezed up around the gold. When assured that all enamel margins are clear I exchange my pluggers and proceed to anneal my gold and finish in the ordinary manner. In large gold fillings it is sometimes necessary to make more than one mix of cement, the second being placed in the cavity after the first part of the filling is inserted.

For alloy fillings the procedure is the same, small pieces of the filling material are thoroughly burnished into the cavity lining until firmly anchored as noted above. Now all margins are carefully examined and cleared from overhanging material. If desired I now adjust my matrix, or proceed to complete the filling with no further regard to the cement.

A few negatives in conclusion: Do not expect cement to do all manner of impossible things. Do not daub a large body of cement under any material and then condemn the practice because this one was a failure. Do not embrace the doctrine that if the tooth is foreordained to be saved it will be saved, and that if it is foreordained to be lost it will be lost regardless of careful attention to every minor detail on the part of the operator.

With such practice we may succeed in proving our faith by our works, but we shall not prove ourselves to be a blessing to our day and generation in the field of our chosen profession.

PRESIDENT'S ADDRESS.*

BY DR. M. R. HARNED, ROCKFORD, ILL.

Gentlemen: Today we meet to celebrate the eighteenth anniversary of the birth of a little Miss called "The Northern Illinois Dental Society." A long name for a child, but not burdensome, and while somewhat delicate at first, a resolution early made by the family to give her large quantities of love and mutual helpfulness, together with plenty of brain food, and later develop her with appropriate clinical exercises, has made of her this well rounded, beautiful, mature Miss, whom we all love so much (for we are all men), and whom today we honor.

True, there have been sickly days, but they are the result, largely, of overindulgence in good things, such as crown work, bridge work, cocaine anesthesia, cataphoresis, etc., but this has occurred between performances, and hence every exhibition of our child has been fine and wholesome.

Through our love and sacrifice for her, we have come to know and appreciate each other, and have found that we are really a family of brothers instead of adversaries, and what we have done for *her* has done *us* more good than any one else.

All these years she has been our child, and so she will continue, but having attained her majority, she is ready to be married; and I hereby offer her hand in marriage to any conscientious dentist outside the family, who will promise to love, cherish and support: on one condition, however. He must take *her name*.

The simile might be carried much further, as, for instance, in the matter of support; while we bestow upon her the best dowry of which we are capable, yet we expect the groom to do his part; we rather expect as an outgrowth of this union the birth of occasional smaller societies, and much development of character.

At our last meeting, when we were contemplating the reorganization plan for the State society, which succeeded so happily, some one being anxious for the welfare of this Society, asked if it would not

*Read before the Northern Illinois Dental Society, at Elgin, October, 1905.

have a tendency to break it up, but I trust you are already convinced ; if not you soon will be, that quite the opposite is true, and we expect not only the largest attendance, but the greatest cordiality, the most interesting program, the most helpful interchange of ideas ; in fact, the best time we ever had.

How fortunate it is that, of the things really worth having in life, the more we give the more we have left, it applies in this case, as the more we have given to the State society, the more we have of our own. But the real reason that we have the best dental society is that we have the best lot of dentists known of which to make a society. Then we have been meeting together for eighteen years and the Society has made good fellows of us, until now we make a specialty of not only being good dentists but "good fellows." If some one has not had hold of your hand who squeezed it good and made you feel at home, just put it out where we can get a chance at it and note the results ; we are simply overflowing with kindness and we are each a part of it.

To the newcomer I wish, in behalf of the Society, to extend a cordial welcome, to say that we need you, as much as you need us ; we promise to reciprocate your every advance, we lay aside prejudice and guarantee satisfaction.

A glance back over these eighteen years shows that they have been so radically evolutionary as to be actually revolutionary, wonderful years in the development of our profession.

Eighteen years ago bridgework was only in the experimental stage ; we were skeptical about the durability of any appliance which bound together two teeth. We had to be convinced, and then we became enthusiastic, and it was abused outrageously, but as the outgrowth we have learned, largely through making properly fitting crowns, to save a great many teeth which were previously condemned, and many, many patients are thankful to escape the plate pestilence, which had for years been epidemic.

Emerson says that, "For every thing we get, we must pay a price in some form." And this is not an exception, for many have had to suffer from nasty, vile-smelling, ill-fitting appliances, from horrible yawning chasms lined with conspicuous gold crowns, and a vitiated taste which made them like it.

But through it we have developed a knowledge of root preparation and preservation, simply marvelous to the practitioner of eighteen years ago, and we can now save practically anything that is solid in the jaw and make it do service.

Eighteen years ago, the authority on Oral Surgery was Dr. Garretson (a grand man whom I love to honor), but his surgery today would not be good authority by any means.

In those days a 10 per cent solution of tincture of iodine gave us asepsis, while a 10 per cent solution of carbolic acid was an excellent sterilizer.

In these years we have seen the old oxychloride and oxysulphate cements replaced by the modern oxyphosphates which are submarine and seem almost indestructible, and yet we look and hope for improvement. We have seen "cavity preparation" taken from obscurity and uncertainty and placed in a scientific and teachable system, which leaves no uncertainty except your patient's endurance. The matter of treating and filling root canals, using sulphuric acid for opening, has been so perfected that the principal guess work lies with the patient, viz., How far beyond end of root has filling gone.

Within these years, electricity as an adjunct to dentistry has been developed and this in itself has revolutionized dentistry, it has lightened the work, and enables us to accomplish more and better results. It makes the work neater and more attractive and has made the use of porcelain in its various forms practical, and this is the greatest step in modern dentistry, because it enables us to imitate nature, to restore lost parts with the most compatible material known to us, it saves the patients pain, and preserves the teeth better than any other known combination, but most of all it makes of us better and more artistic dentists. No man can attain decent results with porcelain and not be educated in carefulness, skill and manipulative ability, besides improving his and his patients' taste.

The porcelain inlay has led to the gold inlay, which today saves us and our patients so much nervous strain and weariness, and most of all saves teeth which would otherwise have to be crowned, as some one has said, "It is the missing link between filling and crowning."

Mechanically, there is little left of the old appliance. Skill, wonderful skill, has been applied to the manufacture of our instruments

and we are under deep obligations to our dental supply houses for what they have contributed to our profession.

And so I might go on without limit to tell of changes wrought in our practice and theory, but I turn from this to tell of one change most wonderful of all, and that is the change of relation toward each other, and toward the rest of mankind.

Some one has said that "Civilization is right relationship," living in harmony with others, and when you can live in harmony with your competitor, and love him, too, then you are civilized. The dentists of Northern Illinois are civilized, and one of the great forces which has worked for this is this Society. And I can say with every member present that I am proud to be a member of the *Best* dental society; as I am proud of the honor you have conferred upon me, so also am I proud of this spirit of enthusiasm, helpfulness and kindness which we know will prevail throughout this session.

Did you ever think of the origin and meaning of the word kindness? Its synonym is kinship, meaning kinship, relationship and helpfulness, implying a family the type of helpfulness and mutual benefit, and the unit of civilization. And when we as dentists take on the relation of kindness, or kinship, is it any wonder we feel justly proud of our part in the advancement of civilization? This spirit of kindness, with cheerfulness, changes our whole environment and influence, as suggested by the little poem entitled "Watch the Corners."

"When you wake up in the morning of a chill and cheerless day
And feel inclined to grumble, pout or frown,
Just glance into the mirror and you will quickly see,
It's all because the corners of your mouth turn down.
Then take this simple rhyme,
Remember it in time,
It's always dreary weather in countryside or town
When you wake up and find the corners of your mouth turned down.

"If you wake up in the morning full of bright and happy thoughts
And begin to count the blessings in your cup;
Then glance into the mirror and you will quickly see
It's all because the corners of your mouth turn up.
Then take this little rhyme,
Remember all the time,
There's joy a plenty in this world to fill life's cup
If you'll only keep the corners of your mouth turned up."

One of the greatest dangers which confronts a dentist is that he becomes satisfied with himself and stops where the college left him;

this is also dangerous to his patients. It is very easy, for most of us come from college with a debt, and we feel the necessity of making money, and when we get it coming our way, we think we will soon be so "fixed," that we will not have to work so hard, and can afford to take time to attend society meetings, but alas! that time never comes, for if we get the money, it is at the expense of desire for intellectual growth; but most of us do not get it.

One of our members said the other day of attending this meeting, when some one said he wanted to see the program before deciding to go: "Of course we will have a good program, but if it didn't amount to shucks, I would go anyway, just to meet the fellows, and I would get my money's worth, too."

This is a spirit of fraternity which is far above the mere getting of ideas which can be minted at the dental office, and I can assure you this is one of the fellows who is giving most freely and he is being richly rewarded.

I wonder if we all realize how truly we mold our lives and actions by our thoughts. If we become selfish and narrow it reacts upon us; if we are trying to get the other fellow's plan of success so we may imitate, we will never succeed. We must keep giving off, that we may take in more.

We are like conductors in the great irrigating system of civilization. Suppose a conductor said, "I have all the vital fluid I can hold; I will just separate myself from the system and stand on end, that I may be seen by all and hailed as great. I will ask nothing and give nothing." How soon would this conductor become useless to itself and everything else; no matter if it was filled up occasionally, it would only overflow a little, making a mud-puddle and doing no good.

And so, if we separate ourselves from the great system of "oral-irrigators," "dental doers," no matter how tall we are, we are of no use. We may slop over a little in spots and make some poor, ignorant individual think we are great, but if we would be truly great and useful, we must make our minds the channels for eternal truths, and the truths will in turn make us great and helpful.

"Blessed is the man who has found his work," is good, but "Blessed is the man who does his work," suits me better, who does it

every day the best he can, by the best method known and keeps his eye open for a better one, is fulfilling in the highest measure his purpose in life. What kind of answer will we give to Ella Wheeler Wilcox's little poem entitled "Which Are You?"

There are two kinds of people on earth today;
Just two kinds of people, no more, I say.

Not the sinner and saint, for it's well understood,
The good are half bad, and the bad are half good.

Not the rich and the poor, for to rate a man's wealth,
You must first know the state of his conscience and health.

Not the humble and proud, for in life's little span,
Who puts on vain airs is not counted a man.

Not the happy and sad, for the swift flying years
Bring each man his laughter, and each man his tears.

No; the two kinds of people on earth I mean,
Are the people who lift, and the people who lean.

Where e'er you go, you will find the earth's masses
Are always divided into just these two classes.

And, oddly enough, you will find, too, I ween,
There's only one lifter to twenty who lean.

In which class are you? Are you easing the load
Of overtaxed lifters, who toil down the road?

Or are you a leaner, who lets others share
Your portion of labor, and worry and care?

But in order to do his work, one must know and keep knowing; he must form the habit of learning, and keep it up as long as he lives and hopes to do, and he must not confine his learning to simply one line, but he must know many things in order to know one thing well and truly, for all things are related and interdependent. And so in urging the new member to mingle with his kind, I would also urge him to give as freely as possible. The more you give of yourself the more you get. The dental society is to the practitioner a sort of *periodic post graduate course*, and on the principle that "no one else learns so much as the teacher," let every one become a teacher, and when you are asked to write a paper or give a clinic, remember in responding and doing you are getting more good than anyone else; but if you do not feel you can do either this year, we need you just the same, and this, please remember, is *our* Society, not *their* society, and our Society is what we make it for us, "The best on earth."

Much there is for us to do, as we know a large percentage of people lose their teeth from lack of care, and to me one of the most important things for this generation of dentists to do is to know and spread the knowledge of the proper care of the teeth.

Will some dentist in this Society be great enough to devise a plan by which the people may become interested and informed in these matters? The future of dentistry is prevention, but it takes a long time to accomplish it.

The ideal filling is to be discovered in the very near future, and then our principal business will be as teachers and we must know in order to teach.

Emerson says, "There are three kinds of persons in the world: knowers, doers and sayers." And we as a profession stand pre-eminently in the foreground as doers and are not second as knowers; but as sayers we need a little training. We need to say things better, to cultivate the art of expression, and this is the place to do it, for being all in the same boat, we will not be critical. And so we hope for ready and prompt discussion. If you think of something, say it, so we may all have the benefit.

And now in conclusion, I would like to read the "Horoscope" of the Miss to whom I introduced you this morning.

Born October, 1887, of respectable parents, whose desire was her welfare, and coming as she did under the sign of Libra—the scales—the emblem of justice—what could be more propitious? Born under this sign, she would be possessed of generous temperament and imbued with a desire to be useful; she would be prodigal of money, but yet have all that was necessary. In appearance attractive. She would have many friends, and always the best because of willingness to help all of them. Intellectually, she should be equal to any requirement. All this we know is right, for we have seen it.

Future. A constant developing and rounding of character will make her a power for good in our community. She will wield a tremendous influence both directly and through her numerous progeny, but her general popularity may lead to jealousy on the part of the designing. She will demand of her friends and family the best of which they are capable. She will live a long life and never grow old, and if she perish it is pretty sure to be by accident.

PYORRHEA.*

BY D. H. SMITH, D. D. S., CHICAGO.

A feeling exists in our profession that pyorrhea is an incurable and a mysterious disease, one of which we know so little that we can not hope to successfully treat it until we increase our knowledge regarding the factors which are responsible for its establishment. These are the widespread and almost universal misconceptions of pyorrhea. In the first place pyorrhea is a disease which constantly progresses toward a cure. Nature in her own way cures pyorrhea, the progress of the disease being steadily toward that end. Pyorrhea is not a disease of the tooth, but of the alveolus. It is true that the term is a bad one; but in all the varied conditions classified under the heading of pyorrhea, all are affections of the socket—the tooth itself being healthy, or at least taking a passive part in the series of pathological phenomena constituting the process.

Pyorrhea, as I have said, always progresses steadily toward a natural cure, but nature's efforts result in the loss of the tooth before resolution occurs. Every dental surgeon has hastened the course of these alveolar disturbances by the extraction of teeth after they have become too loose to be useful to the patient. Whether the disease is of bacterial, mechanical, or chemical origin is not my purpose to discuss in this paper; it is the product of the disease deposited upon the surface of the root that prevents a natural cure without the loss of the tooth. Let us for a moment consider the process developing in tissues surrounding a sterile foreign body lying in any of the soft parts of the human anatomy. A sterile object free from sharp angles or points will lie in the soft parts for years without causing any trouble. Pieces of sterile celluloid and silver are buried by surgeons in the soft parts of the body. Silk is used for suturing in many operations and these foreign bodies, if kept free from infection cause no trouble. A sharp pointed or angular body thus buried and subjected to pressure will mechanically injure the tissues immediately adjacent to it, and this repeated injury may be followed by the develop-

*Read before the Morgan County Dental Society.

ment of an inflammatory process, and ultimately abscess formation. A healthy tooth yields slightly under pressure; so that, should the surface of the root of the tooth become covered with angular nodules, or sharp pointed deposits, a mechanical irritation of the soft parts may be expected to develop as the result of the slight motion caused by mastication. Now, this irritation may be expected to be followed by an infection from the mouth in time, if not from the blood current, and it is then apparent that we have practically all the processes present in fully developed pyorrhea. There is a natural tendency for a simple inflammation to subside, if the cause is removed. In pyorrhea we have an alveolar inflammation and the affection results in losing the tooth, the root having upon its surface deposits which are capable of keeping up an irritation, not owing to the chemical composition of the deposits, for they are insoluble, but owing to their physical outline. We must remove the deposits that are constantly irritating the surrounding soft parts, or nature will do so, even at the sacrifice of a healthy tooth. The deposits upon the tooth are responsible for the perpetuation of the disease and our office is to aid nature by removing these deposits. The removal of pyorrheal deposits is a delicate task, and one that calls for a degree of skill which may never be acquired by some operators. Care, patience, thoroughness and time are absolutely necessary, but the operator who will combine these four things need have no fear as to his ability to cure pyorrhea.

Will the soft parts re-attach themselves to the root after it has been freed of the deposits? That is the question which arises in the minds of those of you who have not observed the course of these cases subsequent to the operation. Those of us who are successfully treating these cases see the tooth gradually becoming firmly re-attached to the adjacent tissues, as the inflammatory process subsides. If this normal condition fails to come about and the tooth remains loose in the socket, you can be sure of one thing: Absorption of that root has taken place, and it is necessary on your part to supply such tooth with a healthy root. My experience has not extended over a sufficient period that I may say positively that they remain free from relapse, but in cases of Dr. Robert Good, whose work has been an inspiration to me, I have had the pleasure of seeing patients who have remained free from recurrence of this disease ten years after treatment, during

which time they have enjoyed the use of their teeth, saved by the operations.

NOTE BY THE EDITOR OF THE ILLINOIS STATE DENTAL SOCIETY.—The statement of the essayist that "Pyorrhea is not a disease of the tooth but of the alveolus" and "In all the varied conditions classified under the heading of pyorrhea all are affections of the socket, the tooth itself being healthy, or at least taking a passive part in the series of pathological phenomena constituting the process," is open to very serious question. The periodontal membrane, which is the tissue involved in these cases, is as much an integral part of the tooth as of the alveolus, and a tooth can not be said to be "healthy" or "passive" with respect to a pathological process when one of the essential tissues composing it is the seat of the disease. Another statement is equally objectionable, namely, that "Pyorrhea always progresses steadily toward a natural cure, but nature's efforts result in the loss of the tooth before resolution occurs." It is true that the human body in which the diseased tooth and socket are situated may be said to be "cured," but so far as relates to the tooth and its alveolus, a process that results in the total destruction and elimination of a tissue or organ can not be called a "cure."

"WHERE ARE WE AT?"*

BY DR. JOHN DOUGLAS REID, PANA, ILL.

I am unaware of the origin of this ungrammatical query, but I selected it because it was sufficiently ambiguous to permit me to touch on almost any subject that might flit through my brain. As my thoughts wandered along, I concluded to try to point out what I have considered one of the gravest faults of our profession, viz., A lack of business sense.

Only recently, a friend, a brother dentist of a neighboring city, made this remark to me: "Well, you know dentists are notoriously poor business men." From college days to the present I have resented this sentiment, but my resentment grows less and less as I grow older, as I meet with more dentists, as I see those in other walks of life acquiring property. If this is true, who is responsible? Ourselves, of course. There is probably no profession nor business requiring more of a man's personal painstaking attention than our own. We are in our offices from 8 a. m. to 6 p. m. We come into contact with few business men. Few business men consult us or give us oppor-

*Read before the Central Illinois Dental Society, September 19, 1905.

tunity to embark in legitimate side lines. If we have very much time to give to outside matters, our own business is not what it should be. 'Tis true, we have abundant opportunities to embark in get-rich-quick schemes and too many are embarking in them, too.

Standard Oil and Beef Trusts, Railroad mergers and Equitable Life are not popular with the masses, but at the heads of them are the keenest business men of this day and age. We hear of business administrations in national, state and municipal affairs. Why not have them in dental affairs? Why shouldn't the dentists of a community get together and stay together? Get together on buying and selling. Now don't throw up your hands in horror and say we're not selling, we're not in business. I tell you, gentlemen of the Central Illinois Dental Society, that it is high time we were getting into business. I believe that it is estimated that wages, provisions and building materials have increased in price from 20 per cent to 40 per cent or even more in the past ten years. Have your fees increased in a like proportion? In numerous instances our supplies have increased in price, notably an increase from 50 per cent to 150 per cent in the price of teeth. Do you get a dollar more for your finished plate than you did eight or ten years ago? When you buy, can you get your supplies for one cent lower from one dealer than from another? No. Because the dealers are all in a trust. They will all admit that they are "combination houses," which simply means that we buy from a dental trust. In other words, they are all business men.

The remedy? Aye, there's the rub. I believe this Society has a partial remedy. It is in that code of ethics we have all signed. The business part is plainly touched upon in Article II, Sections 1 and 2, which I will read:

"Section 1. Every member of the dental profession is bound, as such, to maintain the honor and integrity of the profession. To this end he himself should be upright and courteous in his intercourse with the public and with his brethren in the profession.

"Section 2. It is unprofessional to resort to public advertisements, such as cards, handbills, posters, or signs, calling attention to peculiar styles of work, prices for services, special modes of operating, or to claim superiority over neighboring practitioners; to publish reports of cases or certificates in the public prints; to go from house

to house soliciting or performing operations; to circulate or recommend nostrums, or to perform any other similar acts."

In Section 2, I can see that the third word "unprofessional" is synonymous of "unbusiness like," because I do believe it is as unbusinesslike to resort to the practices therein enumerated as it is unbusinesslike *not* to advertise in the dry goods or grocery business.

Another remedy is the getting together and establishing uniform minimum fees. Don't say it can not be done. It can. In many localities it is done among physicians. You can not come to our town and have a physician call upon you for less than \$1.50, but you can go to some towns and get silver filling put in by one dentist for 50 cents (so the fence boards say), but other ones will charge you \$1.00. There's where the lack of business acumen shows. Will you explain why one man will and does advertise to put on gold crowns for \$5.00, with no limit as to size, position or condition of the tooth to be crowned, while his professional colleague is getting from \$6.00 to \$10.00 for the same work? Is the first man, whom I will designate as Dr. A, doing what he says he will do? If so, does he value his services below those of his colleague, Dr. B, or is Dr. B asking too much for his services? Why don't A and B get together, agree on the charges for this kind of work and quit cutting each other's throats professionally? With conditions of this kind existing, how can we blame the public for "shopping" when they need our professional attention? If they see that Dr. A is advertising "bargain prices" on crowns, why not go to Dr. B and say, "Here's so much work to be done in our family, how much will you do it for?" If Dr. B is anxious for work and especially if he is satisfied that the "job" (perish the word in dental practice) has been figured on by Dr. A he makes a close estimate and then strikes just a little below Dr. A and gets the work to do. Then how he does squirm and manœuvre to keep from doing \$25 worth of work for \$20, for when he gets into the work he finds two or three old dead, stinking pulps to take out, root canals to sterilize and dressings to seal in. In a few days, maybe the next day, a return of the patient with a glorious old abscess boiling away and Dr. B proceeds to give those teeth another treatment for which he gets what? Nothing but a good old professional black eye, for he hears from the neighborhood in which this patient lives that Dr. B does not know his business, because he said the nerve was dead

when it wasn't. It kept that patient up all night and they had to come back next day and have it killed. Ever have that experience? Served you right if you took that patient by the "job."

What would you think of a physician who would offer to take a case of typhoid fever to cure, mind you, I say "to cure," for \$20, \$30 or \$50? You would "dub" him a fool or a quack and dismiss him instantly. We do not ask a physician to cure us for a specific amount. He may not be able to cure us at all. What we do want is his best attention and we are willing to pay him for every call he makes.

Years ago I learned the fallacy of taking a set of teeth to fix up for a specific amount, and I'll tell you of an incident that settled this question with me.

Early in my career, when patients were few, a man came into my office and asked what I would fix his teeth for. I made an examination, figured a while, and as I was anxious for work and needed the money, I at last said \$10. Now that man had about \$14 worth of work to be done, but as I said, I needed money and a \$10 fee looked awfully big to me. The price was satisfactory to him, especially when he learned that he was going to get \$14 worth of work for \$10. I started in and did about \$3 of work at the first sitting, computing the same at what I called my regular rates. This, of course, left \$11 worth of work still to be done, computing at regular fees; but the man decided to move away from town and I had no opportunity to finish the work. The day he was to leave, I called and presented my bill for professional services, \$3. Would he pay? No, indeed; he had \$11 worth of work coming to him, he said, and when that was done he said he would only owe me \$10. He would not pay me \$3 for the little I had done—he'd pay what was right, but not more. Rather than continue the argument, I suggested a compromise and finally had to accept \$1.50 for my services. Since then I have often wondered that he paid me a cent and that he didn't ask me to pay him a dollar, so he could get the work done and have it not cost him more than I would have charged him, because he had \$11 worth more of work to do, and I would have done it all for \$10.

I wish to deprecate another way in which we are worked—that is this thing of paying \$1, \$5 or \$10 for a write-up of ourselves in the "official organ of the Brotherhood of Indigent Bank Presidents,

in 'The Chamber Maids' Own'," or some other equally influential publication. You know when you read the article that it is a lot of nonsensical tommyrot, and when you pay for it you feel that you would have gotten more good out of your dollars had you placed them on the probability that the Hon. Mr. Britt would punch the head off of Professor Nelson.

Consolidation and co-operation seem to be the watchwords of the financial and industrial world today. Consolidation of business interests, we might say, means trusts. Co-operation in the industrial field means, I will say, trade unions. Who will gainsay that they are not from a business point of view financially beneficial to those concerned?

Shall we be behind the manufacturer, the miner, the painter, the carpenter, the railroad employee? Shall we show less business acuteness than they? This matter of getting together concerns all members of this Society. Our interests are so closely interwoven that what concerns one concerns all. The territories from which we draw our respective practices are so closely related that we are all practically competitors of one another, yet to get the most good out of our profession we must work in unison, build up rather than tear down the dignity of our calling.

I have no set nor patent scheme for accomplishing the ends I herein advocate, but I do believe that we can get better fees, pay less for our raw materials, circumvent some of the deadbeats, be happier, have a better feeling for our professional brethren and show that we are business men and know how to conduct our business if we would adopt them.

I believe that this Society in bringing us into better acquaintance with one another is the opportunity we long have sought and that before our annual meeting in February, 1906, we will know "Where we are at?"

In closing, I will give you the late Senator Ingalls' idea of opportunity. Shall we grasp it and apply it to our present needs?

"Master of human destinies am I,
Fame, love and fortune on my footsteps wait.
Cities and fields I walk, I penetrate
Deserts and seas remote, and passing by
Hovel and mart and palace, soon or late,
I knock unbidden once at every gate."

If sleeping, wake; if feasting, rise before
I turn away. It is the hour of fate,
And they who follow me reach every state
Mortals desire, and conquer every foe
Save death; but those who doubt or hesitate,
Condemned to failure, penury and woe,
Seek me in vain and uselessly implore;
I answer not, and return no more."

PUTRESCENT PULPS AND THEIR TREATMENT.*

BY DR. ALGY F. STRANGE, LITCHFIELD, ILL.

The causes of putrescent pulps I have divided into four classes:

1. Mechanical. 2. Thermal. 3. Infection through caries. 4. Lack of nutrition.

(1) Under "Mechanical" causes might be mentioned blows, biting threads, too rapid movement of teeth in regulating, etc.

(2) "Thermal." Usually fillings which too closely approximate the pulp without sufficient intermediate lining. (Although I have known smokers to destroy pulps in seemingly sound teeth, from the heat of cigars and pipe stems.)

(3) The most common cause is from decay, the pulp through exposure being subject to irritation, inflammation, infection, hypertrophy, suppuration and death.

(4) In a few cases we find the pulp dead, without any apparent causes. In these cases the health of the patient is generally below par, the nutrient function impaired and upon closer examination we may find calcific deposits in the pulp chamber, or in the pulp itself, or upon the apex of the root, cutting off the vascular and nerve supply.

I have also noticed a few instances which I can hardly place in either class, where I have concluded that it must be due to infection entering the pulp chamber through the apical foramen.

Under a filling a putrescent pulp will cause a throbbing pain, and the tooth becomes unusually sensitive to pressure. The application of heat will cause an increase of pain (by the expansion of the gases),

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while cold will reduce it, the action on a vital tooth being just the reverse.

There is invariably a septic condition present at the apices of the roots, and frequently a necrotic condition of the pericementum, with possibly a disintegration of the alveolar process.

The decomposed pulps of the deciduous teeth seem to become more vile than those of the permanent ones. The breath of the little patient has an odor strong enough to permeate the air of the entire operating room. They require much more time and patience and are much more difficult to cleanse and treat than those of adults. Often it is impossible to apply the rubber dam, and owing to the restlessness of the little ones it is very hard to exclude the fluids of the mouth. In adults there is seldom an excuse for not applying the rubber dam, and the success that follows our efforts is largely due to this simple step, for we know there are numerous species of bacteria always present in the oral secretions and upon the surfaces of the moist mucous membranes of the mouth, some of which seem to be normal inhabitants, the conditions of temperature, moisture and presence of organic pabulum are so extremely favorable for their development that it seems impossible to destroy or remove them.

The important step in the treatment of such canals is the careful removal of the contents, opening up the tooth with chisels and large burs, using great care to avoid all pressure that might force contents through the apex, thus setting up an acute case of pericementitis.

The contents of the canals should be as nearly sterile as the use of antiseptics will make them before removal. This will require a great degree of care and skill. In using an antiseptic we should not employ anything of sufficient strength to be of itself a source of irritation, weakening the defensive power of the pericemental tissues, nor anything that would be so coagulative as to block the escape of gases and toxins, thus forcing the septic matter through the apex of root.

Something should be applied that possesses great penetrative power. All such antiseptics should be applied in such a manner as to permit of gradual absorption into the infected area, solely through capillary attraction with an entire absence of pressure.

For this I should recommend the use of formalin, following with an alkali, such as the peroxide of hydrogen, or sodium dioxide. They in contact with decomposed organic matter will cause a chemical

reaction, with quite a noticeable effervescence, leaving the debris in a condition that can be easily washed away.

After this careful cleansing the canal should be thoroughly dehydrated, by means of alcohol and a plentiful supply of as warm air as the patient will permit. The mouths of the tubuli are thus opened so that the fibrellae can be more easily acted upon. We are now ready for our antiseptic dressing. For this I have for some time been using, with gratifying results, oxpara. I realize that I am open for more or less ridicule and criticism in using and recommending a proprietary preparation. But I find it more successful than the remedies taught us in college and believe the results more uniform than we will obtain when we use prescriptions as compounded by our local druggists, out of drugs which have probably been in stock for several years.

Oxpara is a combination of formaldehyde, thymol, burnt alum and creasote, a powder and a liquid which should be mixed to a creamy consistency, and inserted upon a few threads of antiseptic cotton or bibulous paper. Upon the return of the patient after the lapse of several days, if there has been no pain, the dressing may be removed, dropping it into a little peroxide of hydrogen, and if there is no effervescence the canals may be filled with safety.

As a canal filling for this class of teeth, I have found nothing better than oxpara in combination with carbonized cotton, which is a good quality of absorbent cotton, saturated with boric acid, placed in an airtight retort, which is gradually raised to a white heat, the cotton being reduced to carbon. This should be held over a bunsen flame and thoroughly sterilized before using. When dry it readily crumbles and is difficult to manipulate, but in combination with oxpara it works easily and very satisfactorily.

If for any occasion it should become necessary to remove the canal filling all that is necessary is to moisten it with the liquid that accompanies the oxpara, which will in a few moments so soften it that it can be removed with ease. A guttapercha point may be inserted in combination with the oxpara and carbonized cotton, when the canal is sufficiently large to permit.

My idea of an ideal root canal filling is something like this:

1. Compatible to tooth structure.
2. Indestructible.
3. Easy to insert.
4. Easy to remove.

While this may not fill the requirements fully, it is as near the ideal as anything I have ever tried.

There are occasionally found putrescent pulps, which are extremely sensitive to the touch of a broach, where the previously described treatment would cause more or less pain, owing to the mummifying agents in the combination. We find arsenic of little service in further destroying the life of the pulp, the blood vessels being engorged and the circulation impaired to such an extent that it is not properly absorbed. Nor can we use pressure anesthesia for the same reason and through fear of forcing septic material through the apex of root. For such cases I employ a mixture of tannic acid and glycerine, which will in a few days so toughen and tan the pulp that it may be removed with little or no pain. The after-treatment would be identical to previous description, until in a condition to be filled or crowned as the case may require.

EXPANSION AND COMPRESSIBILITY OF PLASTER OF PARIS AND CONTRACTION OF VULCANITE.

BY DR. STEWART J. SPENCE, CHATTANOOGA, TENN.

I have been very much pleased to read in THE DENTAL REVIEW of October a very scholarly paper read by Dr. J. H. Prothero on the "Compressibility of Plaster of Paris." It gave me similar pleasure to meet in the August *Cosmos* a paper on the same subject read by Dr. George H. Wilson of Cleveland at the World's Fair of 1904. In my humble way I have been hammering in the journals on this subject of plaster for about four years, with results so meagre, as regards the notice my theories have obtained in the journals, that I had begun to feel like one that shouts in vain to the sleeping inhabitants of a burning house, and now that I find my positions in the main endorsed by names of much greater weight than mine, I can not help but feel some little satisfaction, and congratulate myself on the fact that I am not alone in the charge against plaster of paris that it is "as false as fair." When I commenced the crusade against plaster I found many dentists ignorant even of the

long-established fact that it expands in setting, and some were disposed to be not merely skeptical on the subject, but combative. Now, as the papers of Dr. Wilson and Dr. Prothero show, not only the expansion but the compressibility of plaster of paris is being conceded. If these gentlemen continue their investigations into the sources of misfits in vulcanite plates they will, I hazard the guess, also arrive in due time at the conclusions concerning the contraction of vulcanite which I reached and published in the *Items* and *Cosmos* some few years ago.

And it is with regard to this contraction of vulcanite that I especially wish to speak. For in vain will the dentist use means to render his plaster of paris model as little expanded or compressed as he can, if he then abandons his plate to the mercy of vulcanite contraction.

My experiments (published in the *Items of Interest* for June, 1903) show that *uncontrolled* contraction of vulcanite, after vulcanization for 60 minutes at 320° F., is about 1.5 m.m. in 3 inches (76 m. m.), or nearly 2 per cent. I showed that much of this contraction, measured areally (that is, on the length or breadth of the plate) was prevented by the plaster of paris investment, but that the vertical contraction (that measured through the thickness of the plate), being uncontrolled by investment, proceeds to its full extent of the 2 per cent. This was demonstrated not only by strips of vulcanite, but also by thick plates.

I regard the vertical contraction as very serious wherever plates are more than usually thick over the ridge. While the areal contraction is bad (and especially so if it takes the form of warpage, that is, of uneven contraction; one side of the plate contracting more than the other, so as to be drawn down from the ridge more than the other side), yet areal contraction, when equal throughout the plate, has the advantage that it reduces the area of the plate, and thus tends to counteract the increased area of the model due to expansion of the plaster; which tends (except in warpage cases) to throw less bearing upon the palate; but vertical contraction, on the contrary, being felt where the plate is thick, that is, along the ridge, by reducing thickness here tends to prevent bearing on the ridge and so throws it on the palate. Therefore, for these two reasons—this one just now given and the previously-mentioned one of absence

of control—the vertical contraction of vulcanite is perhaps more to be dreaded than the areal contraction.

To prevent this vertical contraction, I fill in all thick parts of plates with a compound of one part by weight of pulverized aluminum with three parts of red rubber, the latter material being softened by chloroform and the former then rubbed into it. This mixture is devoid of both contraction and porosity.

The areal contraction of vulcanite I prevent by the use of a very hard-setting plaster for investment, which not only sets much harder than does plaster of paris, but retains its hardness throughout vulcanization much better.

To revert to the subject of plaster of paris expansion: I found that there is a second (or, more correctly speaking, a third) expansion of the plaster of paris model, this occurring in the vulcanizer. The first expansion occurs during setting and is complete when the heat of setting is over, which is usually in about half an hour. (The more rapidly this heating takes place the greater is the expansion; ergo, impressions of plaster of paris that become warm before removal from the mouth should be invariably rejected.) The second expansion occurs during the twenty-four to thirty-six hours following setting and during a period which, I think, Dr. Prothero prefers to term crystallization, as distinct from the earlier and shorter period of setting. This second expansion is rarely a fourth as much as the first. When subjected to wet heat in vulcanization the model expands again, and this is about as much as the two previous expansions together. On wondering why the compression of the rubber did not prevent this last expansion, I found, on experiment, that it takes place in the early part of vulcanization,—as soon, in fact, as the heat reaches 320° F., at which time the model is yet but little softened by the wet heat and the rubber is very soft because of the high heat and because of being not yet at all vulcanized.

In considering expansion of the model, we must not forget that it expands vertically as well as areally. If a model were equally thick, of course it would not matter how much it expanded in thickness, as this expansion would be equal; but as they are unequally thick, therefore vertical expansion counts for evil to the extent to which the thickest part is thicker than the thinnest. The same is, of course, true of the impression, if taken in plaster of paris. In both

of these the effect of vertical expansion is, like that of vertical contraction in vulcanite plates, to throw bearing on the palate rather than the ridge.

But these two forms of expansion (areal and vertical) are not the only evils that attach to plaster impressions and models; there is a warpage due to restricted lateral expansion. The flanges of the tray, and the buccal surfaces of the impression, partially prevent lateral expansion. Being thus restrained, the expansion is converted into a bowing up of the palatal dome of impression or model. This bowing up could be prevented by pressure, but such can not be applied. If plaster of paris be poured inside an iron ring, where lateral expansion is on all sides impossible, it will find relief for itself by bowing up at its center. If now, before this bowing commences, and as soon as the plaster is set sufficiently to bear a weight, about five to ten pounds be placed on said center, the bowing up will be prevented.

This experiment shows that the molecules of plaster can be prevented from expanding during setting. For this reason it is not safe to infer that if a plaster will not crack a glass cup while setting in it that it will not expand when used for impression or model.

While Dr. Prothero deserves commendation for his ingenuity in inventing an instrument capable of exhibiting the changes of form of hydrated plaster micrometrically, yet there is by no means so much need of such exact measurements in plaster as in amalgam plugs, and what is needed is some method that may be readily applied by any dentist. For this purpose there is none better than the tray. In it we have the exact conditions of adhesion, friction and resistance of buccal walls that exist in practice. In its use, however, the amateur experimenter needs to be guarded against one fact—that the adhesion of plaster to tray may be such that the flanges will be bent outward so that no space appears between the tray and cast at the palatal dome, and he may be misled into believing that the plaster has not expanded. But if he will remove the cast from the tray and then replace it, the space will be readily apparent. I have found this space to measure from five to fourteen folds of No. 20 tinfoil; the smaller number being with the finest dental plaster; which, however, does not set the hardest. This is with very short stirring. With long-stirring the expansion has reached from fifteen

to thirty folds. By placing these casts in the vulcanizer, at 320° F., the expansion is about doubled. This latter fact must warn against the hasty inference that a cast of plaster of paris which shows "little or no expansion" after crystallization, is safe to use. Not that any brand of plaster of paris has *no* expansion. I have tested nearly all the kinds on the market and invariably obtained expansion in setting, usually about eight folds of the tin.

Dr. Prothero speaks of the "contractile tendency" of a certain plaster. I imagine that this must be due to changes of temperature acting on his micrometer or the casts in it, it measuring very minute changes. I have heard it said that plaster casts expand and contract slightly with the weather, which I can readily believe, for I have shrunk them by dry heat and then found next day, in damp weather, that they were back again to their previous bulks. That plaster of paris contracts largely under much heat all who have used it for soldering investment well know. I found by experiments that to obtain an investment compound that (without expanding in setting) would resist contraction when heated to incandescence for about fifteen minutes in a coal fire, it was necessary to use only a third plaster of paris, the other two-thirds being marble dust and Portland cement, in equal quantities. This, however, gives a very soft investment, and therefore is not to be recommended for general use.

To conclude: There are three factors to be considered in solving the problem of the fit of a vulcanite plate, viz., expansion of plaster, compression of plaster, and contraction of vulcanite. All three must be taken into the field of view. The problem can not be solved by solving any one of these factors. My writings present, I believe, the only solution of the entire problem that has yet been given to the public.

PROCEEDINGS OF SOCIETIES.

WISCONSIN STATE DENTAL SOCIETY, OSHKOSH, JULY,
1905.

Discussion of Dr. Farrand's paper, "Porcelain Inlays."

DR. T. A. HARDGROVE:

I want to congratulate the essayist on this most brilliant paper. He covered the entire field, after his system, in an excellent way. The only thing that I could find wrong in his paper was his system of constructing the inlay. I think that the proper system of constructing an inlay would be to burnish it direct to the cavity. At least it seems to me you get a more accurate fit to burnish it into the cavity you have prepared in the tooth than from an impression once or twice removed from it. The technique of the swage and matrix for an inlay is good practice for a beginner, but I believe that is its only place, or if you intend to send it away to have it made in some laboratory. One could almost make an inlay and set it in the tooth in half the time it takes to tell of that system.

Another feature of his process I did not quite agree with, is the setting of the inlay. He fills the cavity with cement and carries the inlay directly into it. In some proximal cavities, in carrying the inlay to its seat you sometimes carry the cement away from the margin nearest the entrance to the inlay. You can overcome this by flooding the surface of the inlay with cement.

I am in harmony with the rest of his ideas.

DR. SOMMERMEYER:

I agree with Dr. Farrand in many particulars. I have had some trouble with grinding. I have had some margins chip that way. I think if you sacrifice just a shade of enamel you get a better margin. At first I rather scoffed at that, but I have practiced it now, and I have got some very nice results that way. In regard to the different bodies I can not see very much difference between the high fusing and the low fusing. I certainly find it much easier and more convenient to use the low fusing.

DR. W. T. REEVES, Chicago:

I am very much pleased to listen to the paper as read. I think the doctor has covered the subject of his method in the best way I

ever heard it given. If he can encourage you, from following that method, to take up the work I do not think any of you ought to hesitate, because to my mind it is one of the most laborious methods of accomplishing the end that any one can follow. I do not think there is any doubt but what any person using porcelain for filling teeth will find that they will do the best service for their patients that it is possible to accomplish with any material we have had for years for preserving the teeth, up to the present time, and you can use it in all parts of the mouth. As he advised you, do not start in with anything complicated, because if you do you invite failure; but if you begin with a class of cavity that you can handle easily you will be successful, and it will surprise you how short a time it will be before you will progress to more difficult cavities and handle them with ease.

There is so much that I differed from him in regard to his technique, that I hardly feel like entering into a discussion of the paper. It would take too much time. I think there is one feature in connection with his taking impressions that is a misconception of what cavity preparation should be for the work. I do not believe that the essayist would consider that he could take an impression of his model that he has prepared for making his matrix, go through with the same process that he did in taking it from the tooth, finish it complete, carry that through still another impression, and so to a third or fourth, and expect to obtain any results whatever from the last one he made, even taking as complete care of every detail as he did in the original. Now there is just as much difference between his original impression, the work he obtained from that, as there would be in each succeeding step away from the work and directly upon the original, which is the tooth; but, if in cavity preparation he will simplify his preparation, and prepare it so that he gets what I term a lapped joint—not that the porcelain laps upon the outside of the tooth in any sense, but that in the porcelain entering the cavity it forms a lapped joint instead of a butt-ended joint, as he gets in the class of preparations he makes, he would obtain a better fit, and would eliminate the matrix, in having his cavity formed so that the porcelain enters wedge-shaped into the cavity. I think I could demonstrate that almost any time with a few drawings. It is hard by word to convey to any two or three persons the same idea.

It can only be done by ocular demonstration, and really only by cavities prepared in models, or in teeth, that any two or three of you would get the same impression from spoken or written words. For that reason I have said as little on cavity preparation as any other feature of the work; but I think that the main thing comes in a misconception of what is needed in cavity preparation for porcelain fillings.

I hope that the subject will be thoroughly discussed, because there are a great many points that different ones who have had experience should bring out.

DR. B. G. MAERCKLEIN:

I do not think it is well for me to say much on this subject. I am not a very enthusiastic advocate of inlays and have somewhat serious objections to their general use. They have, decidedly, their place, and should be used in their place, and with proper care and proper skill and proper art you can make some of the most beautiful work that can possibly be done. Outside of that I have some serious objections, not so much as to the time it takes to do them, as to their utility. I would not hesitate to say that I could take an ordinary proximal cavity in a molar or bicuspid and fill it well with gold before the gentleman would get the matrix of his inlay ready. That is all I have to say.

DR. J. S. DANFORTH, Sheboygan:

In etching the essayist said he used about five minutes' time. I think that is longer than necessary. And, dropping the acid as he does, I think is rather careless. It takes no time, if he would step into his laboratory and warm a little beeswax and press his inlay into it. It takes about a minute's time to etch it sufficiently.

Just before leaving Sheboygan I picked up the *Cosmos*. There is an article in there—I don't remember who wrote it—and it seemed by the tests that better results could be obtained by under-cutting than by etching. As for this method of swaging it, it is always claimed that you get a closer adaptation, because you eliminate the thickness of the matrix. This article went to prove that you absolutely had to have the space for your cement, and that the thickness of the matrix was no thicker than the cement space should be.

DR. E. C. FRENCH, Eau Claire:

I think the use of porcelain fillings has been demonstrated far enough to show that it has a place in our practice. I have made a few inlays, and I have seen quite a number of other dentists' inlays. I have seen some of them that were out of the other fellow's teeth, and the other fellow saw some of mine that were out; some of the very best ones I think I ever put in. (Laughter.) Some of our advocates of porcelain inlays say we do not need to have much of a cavity to hold them; that if we get a nice matrix fixed in there it doesn't need to be very deep, or to have any angles; that if we make a saucer-shaped cavity and cement it in, it will stay. Well, it will sometimes, and sometimes it won't. (Laughter.) If it is where there is not any stress it is likely to stay awhile; but if there is very much stress, and you have not very much thickness of porcelain, you are going to break your porcelain. You know people break artificial teeth very easily, where there is a great deal of porcelain. I have read a good deal about porcelain inlays, and I have heard Dr. Reeves discuss it and a good many others. When you get all their thoughts sifted down they will amount to about the same thing, and it is just this: That a man who undertakes to do any porcelain inlay work has got to have some technique about it. It is a mechanical art.

There is a great deal in putting great force on the cement, and the less cement you put in the better. I think for twenty years or more I have made gold inlays, and they have stayed as well as any operative work I ever did. I think inlays are all right, but it requires technique to make a nice inlay; and unless you have acquired that technique you had better not try to do very much.

But, I believe porcelain has its place, and I believe every man ought to become proficient in using it; and he can if he will but persevere. If he has mechanical ingenuity he will soon learn. A nice way to learn colors is to take some artist who is using paint, and get him to show you about the use of the different colors to produce certain tints. I have found it a great help. I hope that porcelain inlays will continue to be agitated, and that we will use more of them. I have got them in molar teeth, bicuspid, cuspids and incisors. I have some in molars and bicuspid where I would hardly have thought I would have dared to put in a cement filling, and have it stay. But they are doing fine work, and the result has been very

happy. I don't know how soon they are going to break, but I believe porcelain has its place, along with amalgam and gold.

DR. C. H. FARRAND, La Crosse:

I do not care to take much time in closing. I am pleased with the reception given my paper. I did not expect to come down here and have every one agree with me on my methods. I expected some to disagree, and to say so.

The first speaker takes issue with me, because he says my method of producing an inlay is the longest. Perhaps it is, but I do not think so. All I judge from is what I have seen. I have never seen Dr. Reeves' work, for instance, although I have read his articles. I have seen other men work with the burnishing method, and have been so interested that I took the time that they kept the patient in the chair. Making the inlay in the way I make it, I can make it quicker than they can, for this reason: After preparing the cavity and taking the impression I dismiss the patient. I put another patient in the chair, and while the girl is getting the instruments in shape I have gone through the first step with my inlay; I have invested it. I take it up step by step that way through the day, and I find that I have completed the inlay without taking more time than is necessary. That is the method I pursue in gaining time on the work. Although I know you do not all agree with me, I think it is to be taken into consideration.

I do not intend to cross swords with Dr. Reeves, because I know he is so far superior to me in inlay work that it would be an assumption on my part. I do not claim to be anything more than an amateur in the work. As an amateur I thought the paper might be acceptable to the beginner.

I think perhaps I might take issue with Dr. Maercklein, from the fact that porcelain certainly is a factor in dentistry, and I think it behooves us all to become familiar with it, and especially in its use as a filling material.

CHICAGO-ODONTOGRAPHIC SOCIETY.

A regular meeting was held Tuesday evening, September 19, 1905, with the president, Dr. W. H. Taggart, in the chair.

Dr. Henry L. Banzhaf, of Milwaukee, Wis., read a paper entitled "A Few Thoughts on Dental Caries and Its Rational Treatment."

DISCUSSION.

DR. C. N. JOHNSON:

I think it is an axiom in our society work in Chicago that we are always very glad indeed to welcome to our meetings representative men from other parts of the country. I am very glad that the program committee has decided to make the year's work consist largely of essays from men outside of the city, and I predict that this will prove a great success.

I want to thank Dr. Banzhaf personally and on behalf of the Society for the excellent paper he has presented. We want him to know that he is cordially welcome at all times, as are all good men of our profession.

There are only a few points that I want to refer to briefly. In regard to this apparent chasm between scientific work and the practical application, I want to say, as the essayist has said, that the chasm has grown smaller and smaller. The true scientific work that is done in the laboratory proves eventually to be of the greatest practical benefit, and in no line of effort has that been more apparent than in the question that has been discussed tonight. I remember very well when we sat on the benches as students and listened to what we were pleased at that time to call "theory," that we rebelled somewhat against so much theory, but as time has gone on and the results of all that so-called theoretical teaching have come up in practice I have found that most of it had the closest practical bearing, after all. I am pleased to see this sentiment develop more and more. You do not hear so much criticism of the truly scientific papers, and you do not see so much lack of interest as was evidenced perhaps twenty-five years ago.

I want to refer to one point in connection with anchoring proximal fillings in molars and bicuspid. The question of anchorage, in

the first place, is a mechanical problem, and the mechanics of that problem are governed entirely by the conditions presented in each individual case. The essayist has outlined very beautifully the movement of the mandible in the process of mastication, and probably in a great many cases this movement occurs exactly as he has stated; that is, provided the masticatory apparatus is perfect; but there are very few individuals in which the masticatory apparatus is perfect. If you believe that very many people masticate alike, all you have to do is to sit in a restaurant or public eating place and watch the movements of the jaws of the different people who are masticating.

What is to guide us in anchoring these fillings? There is a certain definite and never-failing guide as to how certain jaws move in masticating. The markings of mastication are left as definitely upon the human teeth as any markings can be made, and the movements of the jaw are indicated by these marks to show just how mastication is performed in that particular mouth and upon the particular region upon which you are operating. To me this study of the markings of mastication is one of the most practical and interesting factors in connection with the subject, and I beg the profession to stop and study it in relation to the anchorage of fillings. After some years of observation I have formed the habit of making less broad anchorage in some cases than formerly, and in other cases broader.

I want to refer to one case, because it set me to thinking of this question. I inserted a filling in the proximal surface of an incisor which involved the incisal angle. In six months that patient came to me with a groove worn across the incisal end of the filling and the filling sprung away from the tooth. I tried to get the patient to close the lower incisor into that groove, and I could not do it. I asked her if she ground her teeth in her sleep and she said: "My husband says I do." I said: "Let's see you do it now." Instantly she shut her teeth in such a way that the lower incisor cut directly into that groove.

If we have a failure of a filling and we stop and study the case we can find the cause if we look long enough.

The greatest blight upon our profession is this thing of doing the same thing in the same way every day. We should take each

individual case and let it be a law unto itself. In the first place, we must know the fundamental principles of the mechanics of anchoring those fillings. When we are grounded in that, we must then base each operation upon the masticatory process.

If the profession will study this paper they will see that behind every statement made by the author was a plea for the study of conditions, and that is the thing we must consider today. We can not do things in a routine way and accomplish the best results for our patients.

DR. DON M. GALLIE:

Mr. President and Gentlemen: Like Dr. Johnson, I desire to thank Dr. Banzhaf, the essayist, for the very excellent paper that he has given us this evening. I want also to congratulate the program committee of the Chicago-Odontographic Society in starting the new year so auspiciously, and also on the effort they have made to give us papers a little different from those we have had during the last few years.

The first part of Dr. Banzhaf's paper dealt with the etiology of dental caries, a subject that perhaps only a few of us are competent to discuss. We have the authority of Dr. Black and Dr. Miller to guide us, and there is no reason why we should take exception to their theories because we know that the work those two men have done has been such that it has made it possible for us to bring about perfection or almost perfection along a practical line of work.

The most important part of the paper is that which appeals to us all in every-day practice—that is, the preparation of cavities and the handling of conditions after we find the ravages of caries—and I think the real nub of the whole subject, as expressed in Dr. Banzhaf's paper, is a plea for thoroughness, and, as Dr. Johnson says, the treatment of the conditions that present themselves in our daily practice.

Dr. Banzhaf speaks of the preparation of cavities as "extension for prevention." He advocates it in many classes of patients, but especially in the mouths of patients under forty years of age. He advises more conservatism when it comes to patients beyond that age. He advocates the extension of a cavity from the area of susceptibility to the area of immunity, that, of course, largely depend-

ing upon the condition of the patient. The thing we are sure of is that cavities must be extended gingivally, buccally and lingually sufficiently far to carry them beyond the area of susceptibility.

He speaks of a pit and fissure cavity, and I am afraid that perhaps some young men who take his advice will hardly carry the margins of their pit and fissure cavities sufficiently far in handling some of these cases; that applies particularly to the lower molar. If we take his advice we shall have our cavity prepared something in the shape of a cross. This, I believe, is a difficult cavity to fill, on account of the sharp angles and small amount of gold to be inserted there, and I believe we would get better results if we prepared that molar more in the shape of a diamond. I agree with Dr. Johnson in regard to the anchoring of proximal and occlusal cavities in bicuspid and molars. The theory that Dr. Banzhaf has advised, quoting from Dr. Wenker, is somewhat new to me. This can all be offset by imperfect mastication. If the thirty-two teeth were all present and in good condition, I can understand how these fillings could be dislodged, as he says, but we seldom find the mouth in perfect condition, so that we can hardly be guided in the way that Dr. Banzhaf indicates. I am a great advocate of the occlusal step in these proximal cavities. From the standpoint of convenience I find it an excellent thing, especially in the distal cavities of the molars; by extending a right angle step we can see into the cavity and be sure of a strong wall. It is difficult to get the anchorage in the buccal and lingual walls sufficiently strong and safe without some danger of tipping.

I was pleased with Dr. Banzhaf's reference to the contact point. The proper appreciation of that matter means the success or failure of the operation. Too often it is not dense enough, so that in a short time it becomes flat and retains food which will cause the recurrence of decay. I expected he would say something about the inter-proximal spaces. There are many cavities which come to us where there has been a destruction of the first bicuspid and the mesial of the second bicuspid. We can fill those cavities and have a contact point such as he described, but we would not have a perfect condition unless we obtained separation to the same extent that the teeth were before they decayed. In some cases it is well to go even beyond that and exaggerate it somewhat if need be.

Another question of importance is that of sharp cusps. It is often necessary to change the shape of a filling on account of the sharp cusps. It is either a question of grinding our filling down or grinding down the sharp opposing cusps. I think if this matter were given proper attention we would have fillings that would last much longer, sometimes, than they do by leaving them in a normal condition.

The noting of landmarks of mastication is, I think, of great importance. Before beginning one of these operations we should, first of all, examine the mouth as to the articulation, so that we may know how to best prepare and shape the cavity to serve the conditions that exist in the mouth. If we simply take the cavity without knowing the surrounding conditions, we would be compelled to do a great deal of grinding before we get perfect occlusion.

I am very pleased to have heard this paper, and I am sure that the Society is to be congratulated upon having had such an excellent paper and one of such practical value.

DR. F. B. NOYES:

Mr. Chairman: We are very glad indeed to have Dr. Banzhaf's paper, especially as it is a practical, theoretical paper, as was stated. I am going to take a little risk in enlarging upon the first part of the paper, if I may, in order to bring out some things in connection with that portion of the paper which, it seems to me, are of very great practical importance.

I have been much interested in studying the appearances of decalcification in enamel and dentine, both in the beginnings of decay and in old decays, making and studying with the microscope many sections, both of normal and abnormal conditions. I have had a chance to see a great many sections in which those conditions were shown. The doctor, in the first part of the paper, contrasted the beginnings of decay in defects of enamel with the beginnings of decay in the smooth surface of the enamel. In studying sections of beginning decays, we see a very striking difference in the effect on the tissue, and one which, it seems to me, needs to have its practical importance emphasized. In the beginning of decay in the natural defects the decalcification begins at the bottom of the defect. Those defects are upon the surface of the tooth, where it is exposed to friction, so that the top of the defect is kept cleansed constantly, and

the acids which are formed in the upper part of the groove are carried away comparatively rapidly by the secretions, but down in the bottom of the defect the acids are accumulated and attack the tissues more rapidly, so that you have a spreading of the decay at the bottom of the defect and a penetration toward the dentine more rapidly than upon the surface. It will often happen that you will have penetration to the dentine and extension in the dentine without any increase in the opening of that natural defect. Sometimes you open these defects and find a vastly larger cavity than you had expected. When you find that there is decay in the bottom of the defect it is then time to cut it out before it goes any further. If it is once stopped it will not recur unless a poor operation is done. On the other hand, it may go on and not show any more on the surface than it does at that time, and still the whole crown will be destroyed.

Dr. Banzhaf seems to imply that decay progresses more rapidly in the enamel than it does in the dentine, a statement which, I think, is not quite correct. The destruction of the tissue is more rapid in dentine than it is in enamel. As soon as the dentine is reached the decay progresses more rapidly from within outward than from without inward. The area of surface may not extend any further at present, but the area of destruction of enamel from within outward will proceed more rapidly, so that very soon you will have that extension progressing to such a point that the whole original area of surface attacked has dropped into the cavity and you have no showing of surface decay at the margin at all, or practically none. You may be deceived in that way and think that extension of the cavity is unnecessary, but if you were putting in a filling and taking only that area, so as to stop the destruction to the enamel from within outward, you would find the surface attacked beginning at the margin of your filling, when upon the surface of the tooth there is apparently no need for extension. That must be judged by the form of the tooth and the contact.

There is one other point which came to my mind during the reading of the paper in connection with this appearance of decalcification and in connection with the work of Dr. Miller. It is a plea for the study of conditions. Very often in opening a compound cavity you find a large cavity in the distal surface of the first bi-

cuspid and a spot upon the mesial surface of the second. In studying these sections one of the most impressive things to me has been the extent of penetration and damage to the tissue coincident with the smaller superficial appearance. I have seen many sections which showed upon the surface of the tooth only a small discolored spot. You could not find the roughness of the surface with a fine explorer, and the section showed the enamel white and soft all the way through, but the dentine was beginning to shrink away from the dento-enamel junction. On the other hand, in teeth extracted from the mouths of old people I have seen such areas marked out clearly and sharply in the brown or dark colored spots which evidently occurred when the patient was young and when there was an acute and active decay which had partially dissolved the enamel all the way through, but its progress had been stopped. There is, in my judgment, a point there to consider. When, in excavating a compound cavity in a tooth, you find a spot upon the other, if the patient is young and the caries active, that must be cut out at once. On the other hand, if it is in a comparatively old person and one in whose mouth the progress of caries is stopping, I believe you are not justified in cutting it out. There is a difference in the conditions which must be taken into consideration. If that condition has passed, the slightly imperfect enamel becomes filled with material which makes it brownish or black. Dr. Miller seems to think that they are sulphites or sulphates—chemical deposits of food material, partly, that have filled up the sieve-like condition between the enamel rods—and he thinks also that those spots that have turned brown are less liable to decay than they were originally.

I do not feel able to discuss the mechanical question brought up in connection with the dislodgment of fillings. It is not an easy subject, but is one in which every individual case must be studied from a mechanical point of view. We do see some things that incline to amuse us. For instance: In a molar, a beautifully anchored mesio-occlusal filling, with a tremendous occlusal anchorage, sufficient to withstand any force, and then you notice that there is no opposing force, no tooth, nothing but the force of an artificial substitute, which could not be as great as that of the natural tooth. It simply indicates that we are not paying sufficient attention to individual conditions,

DR. C. E. BENTLEY:

Mr. Chairman: The representative from Milwaukee has acquitted himself most creditably, and I am sure that this large gathering has been amply repaid by the excellent paper containing his very conservative statements.

As to the first part of the paper, I plead not guilty. I am wholly incompetent to discuss the scientific aspect of the paper, but I am willing to accept the statements of such men as Miller and Black and Noyes in regard to that question. I might say, however, that it seems to me that Dr. Noyes has not disproved the statement that was made in Dr. Banzhaf's paper. If I understand the statement as made by Dr. Banzhaf, it was that the organic substance which surrounds the dentine has a stronger resistance than the enamel body itself. Dr. Noyes presumed to show that there is more rapid destruction of the dentine than the enamel, but I must say that to me he did not prove it. He stated a proposition and gave some instances of the outer portion of the cavity crushing in, but no positive facts as to comparative destruction. I am sure, however, he is amply able to give this evidence.

I desire to pay my especial tribute to that class of men who are sacrificing their time and, in many instances, their money, for the scientific advancement of our profession. I heartily applaud every word Dr. Johnson has uttered in giving to this class of men due praise and justice, for I agree with him that the things that are practical are truly scientific. The subject under consideration this evening, the preparation of cavities, is founded upon a scientific basis. I believe it was Dr. Black who gave to the world what is now known as "extension for prevention." This method was practiced by men many years before Dr. Black formulated any scientific reason for it. It was his collection of data upon the subject that eventuated in his formulating a method that rested upon scientific foundations. When this principle was enunciated and thoroughly demonstrated it was combated for years. We have now come to realize that it is truth, because of the science it involves. Therefore I say these men in the chemical, physiological and bacteriological laboratories should be more encouraged.

I was glad to hear Dr. Banzhaf say that in the anterior teeth where lingual and labial extension should be made that in all cases

porcelain should be used as a filling. I think the doctor is absolutely sound in that recommendation.

DR. R. B. WILSON, St. Paul, Minn.:

I want to thank the Society for the courtesy extended to me and the essayist for the pleasure it has given me to hear his paper. I think Dr. Johnson struck the keynote when he called attention to the study of stress conditions, as that is where the majority of failures occur. We hear a lot said about extension for prevention, and some will tell you that you must extend two-thirds at either the distal or mesial surface or you have not extension for prevention. I agree with the essayist that we should simply extend the lingual or buccal walls so that you get a self-cleansing surface, not necessarily two-thirds.

Another point was the restoration of the dimensions of the teeth mesio-distally; that is often overlooked. It requires oftentimes separation, and in the hurry we do not get proper separation. We do not get the proper contour of the teeth, and do not get restoration of the interproximal spaces. I do not see how any one who makes a study of stress can get good results and make good fillings that involve the mesial or distal surfaces of the teeth without making occlusal anchorage.

In an association of this kind the members are usually all of one mind, and when an outsider comes in he will present some new ideas that are bound to create discussion.

DR. D. M. CATTELL:

There is one point in the paper of the evening which I listened to with a great deal of interest. It is the one I think Dr. Noyes forgot to speak of in his remarks, and that is the varying resistance of enamel in different mouths to carious influence. Is not the action upon the enamel due rather to the surroundings? There may be a slight difference in the structural character of the enamel of different teeth.

Two teeth dropped into the same liquid the effect upon the enamel would be the same. Two teeth from the same mouth, whose character is similar, and drop one in one vessel of acid and one in another vessel of dissimilar acid, the action upon the enamel would be very different. That is the way I have been taught to look upon it.

I would like to ask Dr. Noyes publicly, and let him answer me privately, what he means by a "natural defect," which expression he used several times.

The paper was very interesting and I was glad to hear the essayist say that things brought to our attention in every-day practice are the ones that should be discussed the more frequently.

DR. J. E. NYMAN:

I am willing to grant that laboratory research is of much value in formulating prophylactic measures, but I can not feel that laboratory research is of any such value when we come to study the reparative processes in the treatment of caries of the teeth. I have been led to the best results by clinical observations extending over a period of years in different mouths and in the same mouth, but I have never been able to feel that any one particular clinical observation was sufficient to formulate a hard and fast rule for operating. I feel that there are many conditions which lead us to modify our opinions from the ordinary ideal cavity preparation known as the extension for prevention method. I feel that when I have extended cavities to the point that the patient could clean them with the ordinary brush that I have extended them as far as I am called upon to do. Teeth of great convexity do not require as much extension as teeth of less convexity.

It has been my practice for some time, after I have broken down the walls of the cavity, to take some temporary stopping, heat it up soft and pack it in rather loosely and have the patient chew on it. That shows you what the articulation is, and it helps you very much to make a properly contoured filling.

It has been a source of great pleasure and gratification to me to be able to feel that my good friend, Dr. Banzhaf, has acquitted himself so well.

DR. J. N. CROUSE:

It is often the case that practitioners, when they get into the question of extension for prevention, don't know where to stop. If I have a young girl coming into puberty, when they are usually in poor health and it is very difficult to prepare a cavity in any way without injuring the nervous condition of that patient, I would not start in on the theory of extension for prevention. If all patients were alike, you could lay down a rule, but that is not the case. The

only rule to go by is to study the physical condition of the patient. I want to emphasize the other extreme and say that extension for prevention is all right when you are teaching, but when you come down to practice, practice rationally and apply extension for prevention where it is proper to do so. If I find a cavity in a patient thirty years old and there has been no special change in the condition, I know that it has been ten or twelve or fifteen years coming, and I do not consider it necessary to practice extension for prevention. If I have a patient who is not careful in caring for his teeth I do not think you could extend the area of your filling so as to avoid caries, but where they are careful with their teeth it is not necessary to extend so far, because the teeth will be safe with an ordinary filling. I am, perhaps, too conservative, but I apprehend that that theory has been advanced more because the teachers have had a lot of rash boys, and they have tried to impress upon them the importance of thoroughness and energy which a lot of them lack.

I think the dental profession today is not doing its duty in many respects. I was impressed with this fact when taking a trolley ride on a Blue Island avenue car and noticing the teeth of the people who got on the car. If you could get them into your offices and start them right their health would be better.

I was impressed with what Dr. Noyes said with regard to the starting of decay from a small opening. If it had been attended to promptly a great amount of trouble would have been saved. Supposing this area of decay extends partially, decalcifying the teeth, and suppose you do not cut that all out. Suppose you dress the cavity and shut that up. Is it going to decay again? Is it necessary or is it good practice to cut it all out?

The next question is, why don't some of our pathologists tell us why this black decay begins along about the age of forty and does not occur earlier? The same conditions that bring about decay are in my mouth at one time as well as another, and still decay has stopped.

I believe it is a good practice when you have some evidence of a superficial decay to touch it with nitrate of silver and see how deep it will go. In a few weeks that will show you how far the area of decay has gone. Lots of times you need not go any further, as that will stop the decay.

DR. GALLIE:

In reply to Dr. Crouse I will say that I believe it is the best practice to impress upon the student the necessity of thoroughness, and, if necessary, to go to the extreme instead of stopping short of the extreme. We have too many careless students. Teachers of operative dentistry in the various colleges do not understand extension for prevention as Dr. Crouse evidently understands it. It means to extend the cavity so that it will prevent the recurrence of decay. It simply means thoroughness, and the teacher wants to impress it upon the students, and that is the reason we hear so much about extension for prevention. We must be guided by the conditions, and what sometimes in one mouth will not suit will answer very well in another. It is better for the young and inexperienced man to err on the side of caution rather than on the side of carelessness.

DR. L. H. ARNOLD:

The best time to stop a cavity is before it forms. The essayist several times *almost* said it, but not quite.

He said: "Microorganisms attach themselves to the tooth surfaces." Then he stopped without adding that if they were promptly and constantly polished away the cavity, which is the result of their presence, would be stopped before it came.

He said a further step was a slight roughening of the enamel surface and instructed that all roughening be cut away. If this slightly roughened surface be polished perfectly and *kept polished* further steps of decay are impossible, hence cutting away is needless.

Perfect polishing of the teeth and constant maintenance of the polish will make needless this vast waste of tooth structure in so-called vulnerable positions and even *prevent altogether* the formation of cavities.

Therefore I say: "The best time to stop a cavity is before it begins."

DR. R. B. WILSON:

It seems to me that if a careful practitioner is going to make an operation he takes into consideration his field of operation, just as a surgeon would. If a surgeon is called upon to operate, he does not immediately slash indiscriminately, unless it is absolutely necessary. If a person is in great pain, I believe it is considered good practice

to wait and perform the operation after he has recovered, if it is possible. If a lady comes to you in delicate health, any man would take that into consideration.

Dr. Crouse speaks about leaving the decay in the gingival portion of the cavity. It seems to me it would be as good a practice to take only a portion of the decayed apples out of a barrel as it would be to take a cavity in which caries is found and take out only a portion of the decay. That decay does not recalcify, and it is only a question of time before you will have a recurrence of the decay.

DR. J. E. NYMAN:

I must take exception to the analogy Dr. Wilson drew between a barrel of apples and a cavity. After you have picked over a barrel of apples and leave some bad ones in the bottom of the barrel the environment is the same as before, and the microorganisms have a favorable opportunity for growth. We can put in the tooth a layer of material which acts as a safeguard against thermal shock. The effect of this filling will continue for a long time.

I want to say one word about Dr. Crouse's remarks. I find that in the course of my limited experience that teachers have simply got to exaggerate the principles which they are trying to instill, because if they do not the students fail to notice the essential points of the operation. Every student, after he has grasped the essential points of the operation, very quickly learns to modify individual cases. I have frequently heard old practitioners say that they made the mistake of not cutting away enough. I do not believe that extension as taught today is quite as radical as the extension that has been preached in the magazines of the profession and at clinics.

DR. F. B. NOYES:

I would like to say one word more in regard to the question which Dr. Cattell has asked. I purposely avoided this subject because I don't think much of opinions that you can not back with something else, and I do not know of any evidence that is conclusive to my mind either way; that is, in clinical observation there seems to be exactly the same environment sometimes between one tooth and another, and one is attacked and the other is not. Secondly, we can not assume that the enamel is different. A man may assume that the environment is different in one tooth than in another, but no man can prove his position. The statement of Dr. Cattell is

correct in so far as we can test the enamel of different teeth in the laboratory and get practically no difference in their resistance to acid. The difference is due, as Dr. Black says, to the environment rather than to the structure of the enamel itself.

The matter of extension of caries is simply a fact, a thing which you can see, and that is all I have to say about it. As soon as the decay reaches the dentine the area spreads more rapidly than it did in the enamel.

DR. BANZHAF, in closing the discussion, said:

I am proud to have been your essayist. I thank you for the splendid reception which you have accorded me and the interest you have manifested. There were several points which I hoped to hear elaborated more fully in the discussions. I do not think that Dr. Noyes and I are far apart in our ideas on dental caries. What I meant to say was that the progress of destruction was much slower in dentine than it is in enamel, due to the resistance offered by the organic matrix of the dentine. In caries of the enamel the tissue is completely destroyed as soon as the lime salts are dissolved, which is not the case in the dentine. It is true, as Dr. Noyes has said, that the acid spreads more rapidly in the dentine on account of the natural avenues which facilitate this process, but which, however, does not destroy the dentine immediately.

The whole proposition in regard to occlusal anchorage for retention in distal upper and mesial lower proximal cavities depends on whether or not the lingual upper and buccal lower walls of the cavity are strong enough to prevent displacement by undue stress being brought against the filling. I did not, however, mean to urge grooves in these walls. In regard to the question of stress, we must consider the length of the cusps, habits of mastication and many other things. Again I thank you very much for your kind reception.

On motion of Dr. Goslee the thanks of the Society were tendered to Dr. Banzhaf.

THE SOUTHERN WISCONSIN DENTAL ASSOCIATION,
RACINE, MAY, 1905.

DISCUSSION OF DR. BERRY'S PAPER, "THE TECHNIQUE OF PORCELAIN
CROWNS."

DR. J. S. DANFORTH:

Do you ever have any trouble, where you use a ready-made crown, in the shrinkage of the porcelain in working your matrix or fit? I tried it in a few cases, and it was an utter failure. I went back to grinding.

DR. BERRY:

Do you mean in the shrinkage of the ready-made crown?

DR. DANFORTH:

No; of the new porcelain.

DR. BERRY:

I never had that trouble.

DR. ADOLPH GROPPER:

I am sorry I was not present to hear Dr. Berry's paper, although I have seen his drawings. There are only one or two points that I desire to say anything about. I believe Dr. Berry has taken a great deal of time, and been to a great deal of trouble, to prepare his drawings. The only thing that I would object to at all would be a case of this kind (illustrating) where the attachment of the tooth to the cap is simply the soldering of the ends of the pins down to a small bar of platinum laid on the cap. I believe a crown would be a great deal stronger if the pin of the root was allowed to go up between the pins of the tooth, giving the body a chance to hold onto the pin of the crown. That is about the only criticism I can make about his paper and his drawings. Dr. Berry is certainly entitled to a great deal of credit for the way in which he has got up his drawings, and the paper as he showed it to me in his office.

DR. C. F. RODOLF:

I do not care to enlarge on the discussion of porcelain crowns, as I have a paper on pretty much the same subject myself; but I have one hobby that I practice, and that is that crowns don't need a band for strength. I am glad to have Dr. Berry tell us he is of the same belief.

DR. GRAHAM:

Why does the doctor leave the sharp edges on the corners? Why don't he bevel his whole band before he puts on the cap? He says porcelain on a sharp edge will break.

DR. J. J. WRIGHT:

There are some points in the paper which are very strong ones, and which are admirably shown by Dr. Berry in his cuts. Some of these cuts demonstrate very clearly some cases in which I have had some very sad experiences. For instance, this one here (indicating). You take a tooth with this construction, with a close bite, it is worse than useless because your bite comes in such close proximity to your facing and the pins that it doesn't give any strength to support the work; and I have had many of that class of crowns fail. If I have a case that I care to restore with an all-porcelain crown I prefer to use the other cut Dr. Berry has shown, in what he calls his "ready-made" crowns. I have discarded this class (indicating) of crowns entirely, because it is absolutely impossible to get a perfect fusing between the high fusing bodies of S. S. White, or Brewster, or anybody I have been able to find, with this facing; and with close bites, where there is an articulation with very much strain, you will find with a year or two years' experience that that crown will be the source of a great deal of trouble to you. I would sooner, with a close bite, go back to the old-fashioned Richmond crown, with the gold backing, if I couldn't use what are termed the "ready-made" crowns, to take the strain of the lower tooth at this point.

In regard to the porcelain crowns for bicuspid, I would state that a neater and much better crown can be made of this case (indicating) by simply baking the entire thing of porcelain for bicuspid. I profess I have not become so proficient as to attempt to produce centrals and laterals in that way. With bicuspid you can build this by using the deeper shades of yellow in here (indicating) and getting the exact tint of the other teeth down at the apex. You can make a slight head on the platinum post, just enough to catch it. This pin (indicating) should not be too large, because the larger you have your pin the less porcelain you have, and the weaker tooth.

DR. W. H. CUDWORTH, Milwaukee:

I wish to place myself on record now and for all time that it is absolute folly and waste of time for any man that can bake or fuse,

or knows anything about porcelain whatever, to waste his time selecting a facing to build up a crown against. Now that may seem rather radical. It is simply the degree of proficiency of the man who manipulates the porcelain. Dr. Berry has wasted time and money in selecting a facing to build up a crown. It is absolutely unnecessary. The matter of the attachment to the root is immaterial. We all know that there are lots of men that can fit bands to roots that are absolutely perfect. I don't believe in bands at all. I wouldn't use one under any circumstances, from the experience I have had in past years. If a man can fit a band so that it will not irritate the gum and produce recession, that is all right; he is better than I am. I would simply make my foundation, and I would build it up from any given material I had become accustomed to use. I will guarantee to produce, in characteristics and color, any tooth that God ever let grow in any man's mouth.

DR. H. N. JACKSON:

Dr. Berry made a remark about supporting the work to go into the furnace. I want to know if he has ever tried anything by way of investment that he can put inside of this band in a plastic condition that will stand in the furnace and be all right?

DR. F. H. BERRY:

The supporting blocks are better made of fire clay, and they can easily be modified to fit the case.

DR. C. F. RODOLF:

You can build down a tooth, the same as Dr. Cudworth says, but when you come to build that down your shrinkage takes place, and you have got to make several bakes. My experience is that when you get a good sized porcelain inlay it takes time to bake it, and let it cool off so you can apply your porcelain. I believe the porcelains that are fused are much stronger than we can fuse them in our furnaces.

DR. J. J. WRIGHT:

If you want to bake up a tooth how are you going to get your attachment between the body and your porcelain facing?

DR. RODOLF:

Dr. Cudworth does not advocate any facing. He advocates building it up from the base, as he would a porcelain inlay. Dr.

Cudworth says you can bake that without using a facing, and I was going by what Dr. Cudworth says. I use a porcelain crown, such as the Davis, and add to it by prosthetic porcelain.

DR. J. S. DANFORTH:

I would like to explain the question I asked before, as regards using a ready-made crown. When you bake it on here you haven't an even thickness everywhere. There is a shrinkage of porcelain; and if your porcelain adheres to your platinum, and adheres to this porcelain here (indicating), the shrinkage is uneven and the cope will not fit. I am in favor of that (indicating) if I can bake it. Here our shrinkage would be down. In the other case it would be both ways, and it is apt to draw your cope out of shape.

DR. RODOLF:

It is very easy to do that. I can show you crowns that are an absolute fit.

DR. F. H. BERRY:

I am glad that my remarks have brought out so much discussion. I think perhaps I have learned more about porcelain crown work than I knew before. In my short paper it was impossible to cover all the technique of crown work and bridge work, and you will notice I did not touch on what we call hand carved crowns. The metal construction for such crowns is entirely different from this kind of a crown.

With reference to the shrinkage of the ready-made crown: When I speak of a ready-made crown I mean a Davis or a Logan crown. We never try to fill this (indicating) up at one bake, so that the shrinkage isn't so great on the first baking, and it will not shrink so much the second time.

In regard to the rounding of the edge, to keep the porcelain from cracking. It is true that porcelain will not bake down to a sharp edge without cracking and shrinking. But I was misunderstood. If we have a sharp edge, as the porcelain shrinks it will leave a crack, and the little piece that comes above the facing will scale off.

You ought to use your judgment and discriminate in your metal construction according to the bites. For a short bite tooth I would fill in temporarily, and cut off the pins entirely for the second bake. I would use the pins to attach the face and hold it in its

relative position to the floor until after the first bake, baking a little around the pins; then roughen the back of the facing, which helps the new porcelain to adhere to it, and you have as strong a tooth as you can make with any carved or hand-made tooth. I am glad these points have been brought out in discussion, because it is going to influence some of you to extend your efforts in porcelain crown work, and do away with so much gold work. If I have done that I have done all I started out to do. I thank you.

DISCUSSION OF DR. TRICKY'S PAPER, "CARE OF DENTAL TUBULI UNDER FILLINGS."

DR. J. J. REED, Beloit:

This subject has not been written on very much. It doesn't seem to have received the attention it deserves. When I took up the method a good many years ago I used it more for a cement anchorage than anything else, with amalgam. I consider this an improved method in dentistry. It prevents recurrent caries, just the same as inlays. It seems to be the cement that gives this effect. The doctor accounts for the success of that class of fillings by what he calls "compatibility." I would differ there a little bit, and call it "adaptation." The reason, to my mind, that an amalgam filling fails without the cement lining is that we have a shrinkage, and then the leakage. The same way with gold; and that accounts for the dark joint or black line he speaks of under a filling. I do not think we get that black line under a filling if we have the cavity cleaned out thoroughly, down to perfect dentine, and have the gold adapted perfectly. It is a matter of perfect adaptation. With cement we get that perfect adaptation, the same as we do under an inlay. I contend also that cement under an amalgam filling will prevent the amalgam shrinking. We know that amalgam has a "flow," as demonstrated by Dr. Black. That flow continues throughout years; even in an old filling. You put pressure on an amalgam, and you can squeeze it out of shape. The fact that it flows, or is movable, or is liquid to a degree, leads me to believe that cement will hold the amalgam to the walls of the cavity, and that it can not shrink. I do not think it could be demonstrated that the amalgam parted from the cement. The doctor has given excellent directions in regard to using a small amount of cement in this class of work; just the tiniest bit. The strength

of inlays, or the attachment of inlays, according to our best workers, seems to be in the perfect adaptation of the inlay. When an inlay fits perfectly, the amount of cement is the very minimum; and that is what we want under a filling of this class. The doctor does not use it, as he says, for anchorage at all; but by using it for anchorage we relieve our patients, and we can do more painless dentistry, which is the demand of the day.

DR. J. S. DANFORTH:

I would say that sometimes where we hesitate in leaving a margin or overhanging portion of the tooth, it might be done where we use the cement when it couldn't be done where we used the other filling. Where we used the cement lining it would be more apt to stay.

DR. W. V. B. AMES:

I was told once how to carry a very small portion of cement. Take a very delicate broach and either make a little ring at the end of the broach, or bend the point at an angle of 45 degrees, or 90 degrees—just a little bend that you would almost have to take a magnifier to see—and you will find you can carry a little globule on the end of the broach. Otherwise it would tend to run back. With reference to the shrinkage of amalgam: Theoretically we are not supposed to have shrinkage of amalgams. I don't know whether we do or not. We no doubt have a "flow" to amalgam, and this little film of cement might prevent the flow of the amalgam at the periphery. There might be a flow in mass, but not at the periphery. I believe that in putting fresh amalgam into the cavity with this fresh cement the adhesion would be such between the amalgam and the cavity wall that you would get a good filling instead of a poor one.

DR. FRANK TRICKY:

In regard to shrinkage and leakage of these fillings, I am not satisfied, as I stated, with my conclusions on this. I was hoping somebody would find out what it is that brings us these results. It is very evident, from my own observations, that we get the results, and get rid of the dark line that we have without it. It is the cement that does the work.

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EDITORIAL.

THE DENTAL REVIEW FOR 1906.

The present issue of THE DENTAL REVIEW completes the nineteenth year of its existence, and the publishers and editors look back over the twelve-month just past with peculiar satisfaction. It has been a banner year in the history of the journal. The circulation has very materially increased, and the publication is more widely read than ever before, as is demonstrated by the rapidly growing correspondence from our subscribers complimentary of the matter appearing in the journal. This is very encouraging and it is a constant stimulation to better effort. If the reader will look over the index in the present issue he will see a great diversity of subject-matter by numerous contributors. This is especially true of the Practical Hints Department, a feature of the journal that is proving of great interest to our readers. The plea is once more urged for contributions to this department. Every man has something that lessens his labor in a practical way, and it usually takes only a few words to explain it. Let every reader send in some little hint of this character and it will fill this department with good material for years.

For the new volume several improvements are planned. We are to have a new cover which we predict will greatly please the profession, and which will be referred to more in detail in our January issue. The journal, beginning with 1906, will be issued on the first

instead of the fifteenth of the month, and we shall always aim to be prompt in its publication. This is a feature receiving much favorable comment from our readers, that they can usually rely on getting THE DENTAL REVIEW promptly on the day of publication.

The various departments will be maintained with increasing interest, and more illustrative matter will be used than ever before. The "vacation" articles begun in the October number will be continued, even in the face of certain complaints on the part of our subscribers. These complaints are to the effect that since these articles began THE DENTAL REVIEW is carried out of the reception room by patients and never brought back. We have had numerous requests for extra copies on this account. The publishers say the moral of this is: Take your DENTAL REVIEW home with you. We hope to make the coming year a very successful one, and if we are sustained as we have been in the past by contributors and readers there will be no doubt of the outcome.

ILLINOIS STATE BOARD REGISTRATION.

As will be seen elsewhere in this issue the secretary of the Illinois State Board of Dental Examiners publishes a notice to all practitioners of the State who registered with the board at the time of the passage of the first act in 1881. According to the law all practitioners at that time could register with the secretary of the board, and did not need any further license. After that time all applicants had to be licensed. The passage of the last act rendered it compulsory for all practitioners to display their licenses in their offices. As the registered dentist had no license, provision was made whereby the board could grant a certificate of registration to all the legal practitioners on the books of the board on December 31, 1881. This is done free of charge on application to the secretary. It is impossible for the secretary to know how many of these registered men are still in practice in the State, and the request is hereby made that any one knowing of the death or removal to another State of any of these men will please send such information to the secretary, Dr. J. G. Reid, Trude building, Chicago. It is imperative that all remaining practitioners of this class receive the certificate of registration, and they should communicate with the secretary at once. It may also be

noted in this connection that these registered men were not obliged to make record with the county clerk, as have all licensees since that time. They can practice any place in the State without being recorded, but now in order to comply with the law they must have their certificate of registration to display in their offices. Any further information may be obtained from the secretary.

THE EDITOR'S DESK.

MY SUMMER VACATION.

[Continued from November DENTAL REVIEW.]

YELLOWSTONE PARK.

The Lake Hotel, on the northern shore of Yellowstone Lake, where we stayed the fourth night out, is the largest hotel in the park. It is perfect in its appointments in every particular and is beautifully situated. Here the bears come down in the evening in large numbers—we saw a dozen the night we were there—as well as herds of deer. There was one old grizzly mother with three cubs, and the latter, though rather shy, proved great amusement for the children. One black bear in a playful mood climbed a tree, apparently for the entertainment of the crowd. We also saw a coyote sneaking along the edge of the timber. There is excellent fishing in the lake, as Dr. Izaak abundantly demonstrated. I had gone to my room early that night, while the evening entertainment was on in the corridor, to see that the ten-year-old got to sleep in good season to be ready for an early start in the morning, and had myself dropped into a doze. Presently the Mater came in and waked me—not this time to see if I were comfortable, but so that Dr. Izaak might show me his catch of fish. And surely the sight was worth the awakening. I have never seen a more beautiful string of trout than he showed me that evening, and the experience put him in high glee. He was even seen to dance with the auburn-haired girl after that, while previously he had held himself in somewhat lofty scorn of the attractions of women.

The following day, in driving from Yellowstone Lake to the Canyon Hotel, along the banks of the Yellowstone River, I did not wonder at the doctor's catch of trout. Here we could see from the coach hundreds on hundreds of trout in the water, and the sight was unique and full of interest for others as well as the angler. We came in one place to a sagebrush tourist who gleefully held up a



Lake Hotel, Yellowstone Park.

string of beauties. "What kind of trout are those?" some one asked. "Dunno," said he, "I only know they're good to eat."

The Canyon Hotel is situated at the Grand Canyon and the scenery around here is magnificent. We remained one afternoon and night, and an amusing incident happened, worth relating. When I registered I stipulated for two rooms en suite on the second floor for my family and myself, but the clerk, ignoring my stipulation, sent us up to the third floor, away in the rear of the hotel, in two separate

rooms. When the bell boy showed us to the rooms I protested that this was not what I ordered, but the boy vanished down the hall, and there we were. "Here," said the Mater, "give me a key and I will go down to the office and see the clerk. A woman can do more than a man in a case of this kind." But when she reached the office and the clerk ran his eye over the register and saw a man's name with the party he was obdurate and said he had no other rooms. "Dear me," exclaimed the Mater to a by-stander, in a voice loud enough for the clerk to hear, "it's a dreadful thing to make a woman who is troubled with heart disease climb two flights of stairs to her room." Inside of five minutes a bell boy bustled up and informed us that a mistake had been made and showed us down to two elegant rooms en suite on the second floor front. This is the only instance I have seen on record where a case of heart disease developed so suddenly or resulted so satisfactorily.

Starting out on the next morning I noticed a new horse on the lead team, and when I spoke to Jess about it, he said: "Yes, the other one died last night of colic." I saw that the new horse acted a bit strangely and so remarked to Jess. We then learned that it was one of the saddle horses at the hotel and never had a harness on till that morning. Here we were, sailing down a steep grade from the hotel with one of our leaders an unbroken horse, but everything goes in the the Park and everything seems to turn out all right. "You should have seen him buck this morning when I first put the harness on him," said Jess, with an amused smile.

As we drive along we see a beautiful fawn feeding quietly beside the road, and a little further on a natural freak called the wedded trees. The country is quite thickly wooded here, and there are two trees near the drive which are joined together about half way up by a cross branch, almost as large as the trunks of the trees themselves. The trees stand probably three or four feet apart, and it is a peculiar sight to see them wedded in this way.

We have another taste today of driving along side a high mountain, with a deep ravine below us, through which tumbles a mountain stream. The drive is so high and the embankment so precipitous in places that Jess tells me of a medical man on the trip before ours who had to climb down from the driver's seat and take refuge inside the coach. I am not surprised at this when I look down that abyss

and see the jutting rocks between us and the river below, but the Indian girl perched up beside me seems oblivious to everything but the beauty of the scenery and the exhilaration of the drive. At noon we reach Norris Lunch Station once more, having made the loop of the Park. During the afternoon we drive back over the same road we came from Mammoth and reach the hotel in time to clean up,



Rapids Above Canyon Hotel, Yellowstone Park.

change our clothing, get a good supper and take the six-horse coach down the five-mile drive to Gardiner, where the sleeper for Portland is awaiting us.

We have spent five and one-half days in fairyland and have enjoyed every minute of it. We have formed friendships which we sin-

cerely hope and confidently believe will last a lifetime. As the train moves up toward Livingston, where many of us separate, we are hurriedly chattering as if to make the most of our time. The trained nurse comes into our compartment, where the Collector is already in her "nighty" in the upper berth and kisses her good-bye. Dr. Izaak and the auburn haired girl and Dr. W. and—but if you think I am going to tell things you are vastly mistaken. Fortunately for us, the Georgia boys are going on west to the coast with us. Our sleeper is side-tracked at Livingston to wait for the through train to Portland, and we settle to sleep that night with the most delightful memories of our visit to another world—for such it surely is.

If any of our party should chance to see this account of the trip they will charge me with leaving out more than I have told, and justly so. I am simply inadequate to the task of properly telling it, and the only way to know Yellowstone Park is to go and see it.

FROM LIVINGSTON TO ASHCROFT, BRITISH COLUMBIA.

By the time we awakened next morning our car was rumbling west toward the Rockies. We, of course, had beautiful scenery on this trip in the way of mountains and rivers, but we had been surfeited so with sight seeing that we were content for the most part to loll back comfortably in our seats and visit. The sleeping-car accommodation had all been taken when we left Mammoth—in fact, I reserved my compartment before going through the Park—and the main body of the car, which was an ordinary sleeper, was greatly crowded. Our compartment was accordingly a very comfortable and convenient rendezvous during the day for our acquaintances on the train, and we had some right jolly reunions in it. There, I have unconsciously fallen into a bit of Southern dialect, which, after all, is quite natural in view of the fact that our visitors on the train were so frequently the Georgia boys. What is there about those Southern people that carries such a charm with it? I could talk by the hour with the Georgia boys and be more and more interested and entertained every minute. One of them was a sheriff and the other two were lawyers, and they were most delightful traveling companions. The sheriff told us some interesting stories about the old colored Mammy who had been so long in his family, and who still lives on the old homestead, a few miles out of town. Old Aunt Tennessee he calls her, or, to be

more exact, "Old Aint Tainesssee." There is something wonderfully musical to me in the Southern dialect, and as for the Mater, her tones unconsciously began to take on the Southern inflection and every once in a while she would pop out a native Georgia expression. The sheriff is a big, lusty specimen of manhood, but Old Aunt Tennessee still calls him her "baby," and if he doesn't go out to see her and eat one of her specially prepared chickens every few days she is lashed



The Georgia Boys.

with anxiety lest something has happened to him. If ever I go to Americus, Ga., I am going to look up three of the best fellows I ever met, and I am also going out to see that good old colored Mammy.

After two nights and two days from Gardiner we reach Portland. This is a city of beautiful homes and with such a wealth of flowers that we almost seemed in fairy land. The Collector was simply beside herself with delight. She reveled in flowers, she rolled in flowers, she slept in flowers, she ate with flowers all about her, and, of course, she pressed flowers to bring away with her. Here was a case where

my pockets didn't serve, and so every magazine we had with us was stuffed full between the leaves.

The climate here is superb and—soporific. To one coming from east of the Rockies it is wonderfully sleep-compelling. My eyelids were so heavy that I almost literally fell asleep walking along the street. And how we did sleep in the cool nights.

There are many fine business blocks in Portland and the city has an up-to-date attractiveness. One thing that struck me more forcibly



Typical Portland Home.

than anything else was the class of horses they have there. I didn't see a single inferior horse while there, and I saw a great many very excellent ones. A town that has good horses has a very great deal to recommend it. As to the women of Portland—well, I am a better judge of horses than of women, so I commissioned Dr. W. to look the matter up for me and report. He was still looking when I left Portland, and I have not yet received his report, but I have no idea that it will be anything but favorable, judging from my own casual observation. The water supply of Portland is unique and the quality

perfect. It comes from the famed Mount Hood and, of course, is pure snow water, with the additional distinction of being naturally aerated by a long course of tumbling over rocks and down falls and rapids on the way to the reservoir. The result is one of the purest and most delicious drinking waters one ever tasted.

At Portland we parted from all the friends who had given us so much pleasure during the trip out, and on a beautiful morning we left for Tacoma and Seattle. The country between Portland and Tacoma is a great lumber center and we see many plank wagon roads. It is always interesting to me to study the people on a railway train and this is no exception. I have been watching one old gentleman who is evidently unaccustomed to travel, from the deep and delightful absorption which encompasses him. His eyes are darting from one object to another beside the track, he is half turned in his seat to face the window and his mouth is somewhat open. Nothing escapes him, and I know he wishes the train didn't run quite so fast. When the conductor reaches for his ticket he hands him a street car transfer. The conductor smiles and calls his attention to the mistake. Instantly the old gentleman is all confusion. He excitedly fumbles in his pockets, going from one to another, and of course in his haste overlooks the ticket. He becomes frantic. The conductor passes on to other seats to give him a chance to collect himself. In a few minutes the old man rushes along the aisle toward the conductor, waving the ticket in his hand. The conductor punches it and the excited passenger walks slowly back and settles down in his seat, with a sense of relief on his face. But it was some time before he renewed his interest in things along the line—the scare had been too much for him.

It was on this trip that we saw a typical western sign on a building by the track. It read:

“G———— P————,
COMMONLY KNOWN AS SHORTY.
BLACKSMITH AND HORSESHOER.”

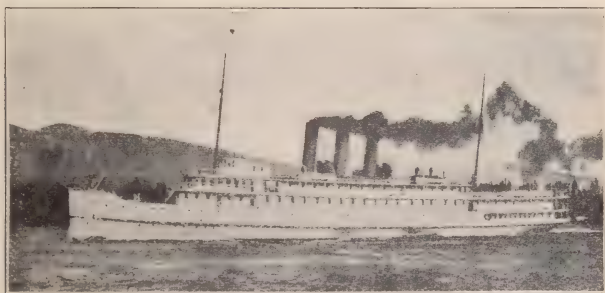
The tourist who has his eyes open never lacks for entertainment while traveling through a strange locality.

I regret that time did not permit a stay at Tacoma, but I am credibly informed by a Tacoma man that it is one of the very greatest

cities on earth. I am willing to believe that this is so, or that it will be so, from the numerous signs we see in all available places along the way, bearing the enthusiastic legend: "*Watch Tacoma Grow.*" The Tacoma man confided to me that this legend simply drove the Portland and Seattle people wild with envy. I can readily believe it.

From Tacoma to Seattle we pass through some of the most fertile valleys that were ever spread out for the bounty of man. It is a perfect paradise for the farmer and stock raiser, and we saw fields of hops, gardens of berries and herds of cattle as fine as the eye ever rested on.

At Seattle we had time to go around the city and study it somewhat. I am not going to give my candid opinion about Seattle for



Steamer Princess Victoria.

fear the people of Portland and Tacoma wouldn't like it. We took a ride out to beautiful Lake Washington in the evening, and the way those cars spin up and down the steepest hills would be a revelation to the traction people of Chicago. It was a delightful trip in every way. We dined that evening at the Rathskeller, a restaurant that for cooking, for variety, for service and for general appointments can not be excelled in any of our metropolitan cities, and which I think must compare favorably with its ancient prototype, the famed Rathskeller of Bremen, Germany. The music here was exquisite, and we dawdled over our teacups for some time listening to it.

We took the boat near midnight for Victoria and Vancouver. The new steamship, the Princess Victoria, is a palace and we had a good night's rest, arriving at Victoria early in the morning. The run

from Victoria to Vancouver was chiefly interesting on account of the large fishing fleet we saw off the mouth of the Fraser River. I counted more than 200 boats in view at one time. At Vancouver are situated some of the large salmon canneries, and this being a good year for salmon they were correspondingly busy.

The following morning we left Vancouver on the Canadian Pacific Railway for a run by daylight of 200 miles up through the coast range of mountains as far as Ashcroft, where the famous Cariboo wagon road begins. We are to stop over at Ashcroft and take a side trip up the ranch and mining country of the Cariboo district, and we wish to arrive at Ashcroft by daylight. The railroad from Vancouver runs along the Fraser River, and about seventy miles up we begin to enter the mountains. We see snow on the peaks and in the crevices. The mountains grow higher and higher and begin to assume a grandeur that we had not before seen. Some of them take fantastic shapes and vividly stir the imagination. In places the peaks look bleak and barren, in others they are softened by verdure, which gives them a velvety effect in the distance. A small zigzag white streak down the mountain side marks the course of a foaming, tumbling stream. A bright straw lying far up near the summit is a bleached log of wood with the sun shining on it. Away off on a rounded peak some dead, limbless trees stud the summit and stand sharply outlined against the sky. They look like nothing so much as a lot of bristles sticking out of the back of the mountain.

At Yale, 103 miles from Vancouver, we come to the head of navigation on the Fraser River. It was from this point that the original Cariboo wagon road was built to the mines in the early sixties, long before the Canadian Pacific Railroad went through. The first 100 miles of this road have been abandoned since the railway came in, but the remains of it may be seen from the train, a vivid reminder of the days when the freight for the mines was hauled hundreds of miles by plodding ox teams. Riding along on the train today and looking out across the Fraser River—which surges down its canyon bed, far below the track—and away up on the opposite mountain side, almost to the clouds, we see a horizontal spider-web streak, broken in places but extending as far as the eye can reach. We are amazed when told that this is the old Cariboo road. It is almost beyond the belief of man to think that such a road was ever traversed by ox teams of

twenty or more in number hauling heavily laden freight wagons. And it is also a comforting reflection to know that this is the sort of road we are to drive over ourselves when we leave Ashcroft. But we



Yale, British Columbia.

are becoming accustomed to sensations on this trip and are determined at least to die game.

The Canadian Pacific Railroad was completed in 1886 and it has

my especial thanks for getting itself completed before I wanted to take my family to British Columbia. With all the nerve that I heroically summoned to my assistance on this journey, with all the unsophisticated innocence of the Mater as to the kind of country I was taking her to, with all the native equipoise and fearlessness of my Indian girl and the childlike trustfulness and confidence of the Collector, I am afraid there was one bit of that old Cariboo road above Yale that would have staggered us and made us think suggestively of the dear ones we had left at home.

At Lytton, 156 miles above Vancouver, the Fraser River diverges from the railway, but its place is immediately taken by the Thompson River, which empties into it at this point. The waters of the Thompson are blue, while the Fraser is always muddy, so we are not sorry to trade streams for the time. Shortly after we passed over this route a bad landslide occurred, whereby a large section of the mountain broke loose and completely buried an Indian village, killing many people and damming the river back for hundreds of feet.

At 4:21 p. m., or, as the Canadian Pacific Railroad time table has it, 16:21, we reach Ashcroft, where we bid good-bye to the railroad for three blessed weeks.

(To be continued.)

BOOK REVIEWS.

THE AMERICAN TEXT-BOOK OF OPERATIVE DENTISTRY.

In contributions by Eminent Authorities. Edited by Edward C. Kirk, D. D. S., Professor of Clinical Dentistry in the University of Pennsylvania, Philadelphia. Written by Edward H. Angle, M. D., D. D. S., Henry H. Burchard, M. D., D. D. S., Calvin S. Case, M. D., D. D. S., Dwight M. Clapp, D. M. D., William Crenshaw, D. D. S., M. H. Cryer, M. D., D. D. S., Edwin T. Darby, M. D., D. D. S., C. L. Goddard, D. D. S., S. H. Guilford, A. M., D. D. S., Ph. D., Joseph B. Head, M. D., D. D. S., Louis Jack, D. D. S., Edward C. Kirk, D. D. S., F. B. Noyes, B. A., D. D. S., Louis Ottofy, D. D. S.,

C. N. Peirce, D. D. S., J. D. Thomas, D. D. S., A. H. Thompson, D. D. S., James Truman, D. D. S. New (3d) edition, enlarged and thoroughly revised. In one octavo volume of 899 pages with 875 illustrations. Cloth, \$6.00 net; leather, \$7.00 net; half-morocco, \$7.50 net. Lea Brothers & Co., publishers, Philadelphia and New York, 1905.

This work has long since taken its place with the permanent literature of dentistry. The list of contributors is an assurance that the book is worthy of a place in every dental library. The new edition contains much additional matter, and the number of illustrations make the text clear and readily understood.

LONG'S DENTAL MATERIA MEDICA AND THERAPEUTICS.

A Text-book of Dental Materia Medica, Therapeutics and Prescription Writing. For Students and Practitioners of Dentistry. By Eli H. Long, M. D., Professor of Materia Medica and Therapeutics in the Dental and Medical Departments of the University of Buffalo, New York. New (2d) edition enlarged and revised to accord with the new United States Pharmacopœia. In one octavo volume 298 pages with seven engravings and eighteen colored diagrams. Cloth, \$3.00, net. Lea Brothers & Co., publishers, Philadelphia and New York, 1905.

This book has been enlarged to the extent of about one-fifth of the original text since the appearance of the first edition two years ago. It is now a work of nearly 300 pages with much useful information written and arranged for dentists. It has often been charged that dentists are not good prescription writers, and this volume will therefore appeal to many on account of an entire chapter of twenty-four pages devoted to this subject.

THE PHYSICIAN'S VISITING LIST FOR 1906.

Price \$1.00. Published by P. Blakiston's Son & Co., Philadelphia.

This is a dainty pocket volume containing a calendar for 1906-1907, together with much useful information on such subjects as incompatibility, poisoning, a dose table and other matters of value in emergencies.

DOMESTIC CORRESPONDENCE.

NEW YORK LETTER.

My Dear Mr. Editor:

Our societies are accumulating energy to give to the profession several of the best meetings of the year. They will take place during December, January and February, the proceedings of which we hope to digest for your readers in such a way as to make them interesting.

During this month, on the fourteenth instant, the First District Society held its regular meeting at the Academy of Medicine. The president, Dr. A. L. Swift, presiding.

The subject of the evening was a paper by Dr. W. B. Dills, of Brooklyn, son-in-law of Dr. F. L. Van Woert, the title of which was, "The Past, Present and Future of Porcelain in Dentistry."

He said of porcelain: "As it was in the beginning, so will it be in the end, an ideal filling." Emphasizing the ideal of porcelain he quoted from Dr. Miller the qualities which make a filling such.

I. Adhesion to the tooth walls. II. Chemical indestructibility. III. Permanence of form. IV. Thermal nonconductivity. V. High degree of adaptability. VI. Color. VII. Absence of injury to surrounding tissues. VIII. Ease of insertion. IX. Imperviousness to moisture.

Fillings of gold require that the tooth always support them. The ideal filling in reality must be a combination of fillings. In the estimation of the essayist there is nothing better than Harvard cement and Jenkins' porcelain body. He conceded in his paper that amalgam has saved more teeth than any other single material. Some of the history of the first known uses of inlays was given, which represented that ground sections of natural teeth were the first attempts, then following those efforts glass was used, then later ground sections of porcelain, etc., until finally the latter day method came in vogue.

The writer might insert here that sections of mineral—jade, common stone, etc.—have been used by the ancients, apparently with some success considering the ages they have survived. The chief feature of interest in them is the medium used for cementing these inlays to the tooth structure. We have never, I believe, been enlightened on this point.

Another bit of modern history which I have never seen in print is that Dr. John H. Meyer, the continuous gum expert, endeavored some twenty or more years ago to fuse pulverized porcelain (Close's body, probably) in a tissue paper matrix.

Dr. Dills paid tribute to Dr. Taggart for his system of porcelain restorations from impressions, and to Dr. Goslee for his hand-made crowns.

He prefers the Detroit modeling compound for cavity impression work carried to place in a small cup or retainer, shaped from pieces of platinoid No. 30 gauge, the cavity having been previously coated with vaseline. The impression is then inserted in plaster to procure a model, from which an amalgam die is made which is supported in dental lac. The matrix is made over this amalgam die by means of a crown swager operated under pressure of a hand press instead of by stroke of a hammer. Pressure only is used, no burnishing.

All in all Dr. Dills' paper was quite interesting and provoked much discussion.

Dr. Joseph Head, of Philadelphia, opened the discussion, after congratulating the essayist, by saying that the greatest compliment he could pay him was to show him wherein he differed.

Speaking of the ideal, he said we never will get it.

He tried to show Dr. Dills that he either misunderstood Dr. Miller's deductions or Dr. Miller did not mean all he said. Miller *never* meant a material that would never wear away. Not one that would exclude moisture, but exclude bacteria, etc.

Dr. Head contended that except for its color, a gold filling inserted in oxyphosphate while soft and in the proper way, has all the advantages and more, than porcelain. It is a nearer approach to the ideal. As to methods of making porcelain fillings, he said while it took Dr. Dills four hours by his method of impression, etc., he could do the same in half an hour, working directly from the cavity.

Dr. W. D. Tracy took some exceptions to Dr. Head's handling of Dr. Miller's deductions as to requirements of the ideal filling. He said he was glad to be a student always under Miller.

"The most interesting part of Dr. Dills' paper was where he showed me how to keep my patient in the chair the shortest time. (Taking impression of cavity method and completing the inlay in the laboratory.)

Prof. A. R. Starr, of the New York College of Dentistry, said he "burnishes all matrices to the cavity. The color problem was his chief difficulty.

Dr. R. M. Sanger said that the real filling material was the oxyphosphate and our aim was to determine how good a protection we could get for it. That seems to be the ideal filling material.

A contention made by Prof. John I. Hart, that there was a distinct disadvantage in working from an impression appealed to all as reasonable, because of the liability to lose definition, except in large proximal cavities back of the cuspids. There probably would be less disadvantage in working from impressions there.

Dr. Ottolengui claimed that he never visited Chicago, but that he became impressed with how far behind New York was. He advised the taking of four or five impressions, for it is hard to get a good amalgam model. Some claim oxyphosphate is superior.

Dr. Tracy said that the further we get away from working directly on the cavity the further we get from accuracy.

Dr. L. C. LeRoy recalled the method of another Chicago man who takes impressions in Arkite cement, swages a matrix of crystal gold on that, then bakes low fusing body into the matrix so obtained.

Dr. Martin Tracy recommended setting inlays with as white cement as could be procured and we would be pleased with the results.

There not being very much for Dr. Dills to say he closed the discussion with but few comments.

The Interstate Dental Fraternity issued a card to its membership which read as follows:

"Dr. T. P. Hinman, our vice-president for Georgia, will read a paper before the Odontological Society on Tuesday evening, November 21st. Members of New York and New Jersey Chapters will dine informally at the Café des Beaux Arts at 6 p. m. and will meet in the office of Dr. Ottolengui at 5:30 p. m."

Between forty and fifty responded to the call to pay compliment to the worthy Atlanta brother.

Dr. Ottolengui's office is in the same building (Beaux Arts, Fortieth street and Sixth avenue). He has an exquisite operating room with a perfect light. The windows extend from floor to ceiling and almost from one side of the room to the other. Those in at-

tendance had an opportunity of seeing and having explained to them Dr. Hinman's models, which elucidated the paper of the evening. We also saw some gold inlays (or probably they are better denominated as cast gold fillings) in actual service. One in particular shown by Dr. Ottolengui in the tooth of a patient showed the entire occlusal restoration. At about the prescribed hour we all repaired to a room set apart for our party in the Beaux Arts restaurant. Dr. John I. Hart by acclamation presided. Some pleasing compliments were tendered the guest by Drs. Hart, Ottolengui, W. W. Walker and others and responded to by Dr. Hinman. The chief theme of conversation, which assumed almost the proportions of a discussion, was the affair of the Prince and Dr. Wilbur M. Dailey, but—that is another story.

My opinion has been, and the general consensus of opinion that evening was, that we must sustain Dr. Dailey.

Following the adjournment of the Interstate Fraternity function, we went to the Academy of Medicine, which is but a few blocks from Fortieth street, where was held the meeting of the Odontological Society presided over by Dr. John I. Hart, before which body Dr. Hinman read the paper, "Gold inlays as Anchorages for Bridge Work and a New, Original Hood Abutment." Dr. Hinman qualified the word "original hood," saying that his system was practically original. His paper was simplified by photographs (probably a dozen on one card) of his models, which he was explaining.

The doctor explained that every case was practical. Existing cavities in the natural teeth could be used for anchorage or a cavity cut for this purpose.

The system means the sacrificing of very little tooth structure and not necessarily any pulps. If an anchorage is to be made to a cuspid he prepares what he calls a two-step, three-pin hood. One step is cut close to gum, not to it, in the base of which a hole is drilled which will clear the pulp. The other step is cut at about the greatest breadth of the tooth; two holes are drilled, one either side of the pulp. Inlay gold .003 is burnished over the whole lingual surface, and malleted to place with properly shaped orange wood in automatic plugger. Pins are seated in holes. The whole is removed from the tooth in impression compound, invested in sump, reinforced except at edges, replaced on tooth, edges burnished again.

From Dr. Hinman's experience these hoods are both esthetic and secure.

The attachment to the molars does not necessitate crowning. The step cavity principle is adopted for these. No pins are required.

He has replaced the four incisors with hoods on cuspids.

In concluding he made the remark that the gold inlay was in its infancy and the gold filling rapidly becoming a thing of the past.

Dr. Ottolengui was called upon to open the discussion. He said "for us old fellows the gold inlay has just arrived in time." It has been said "if we only had a perfect cement." We have such. That absolute adhesive contact makes inlays the perfect fillings. The Hinman method is vastly different from the Alexander or Carmichael.

Dr. Nelson Shields expressed himself quite strongly in disfavor of some points of Dr. Hinman's methods. His contention is that we can not mutilate for young people for this work. In adults whose pulps have receded it would be permissible. If teeth are at all loose this system is of no use. If loose we must get anchorage in pulp chamber.

He recommended the soldering of a platino-iridium pin from inlay to dummy in cases of bridge-work instead of soldering dummy to inlay.

Prof. J. Bond Littig refreshed the memories of those present with the fact that he used the pin attachment for fillings to tips of anterior teeth many years ago and they will hold.

Dr. S. G. Perry said the gold inlay could be made almost as easy as porcelain, and it has the great advantage of close adaptability by burnishing. The nice thing about the hood is that it keeps away from the neck of the tooth and gum.

Dr. Reitz called attention to the many gold and other fillings which have broken away from their attachments and have been replaced with oxyphosphate.

"Cement is the mainstay of any filling," said Dr. F. T. Van Woert, "if you protect it from the fluids. Gold will stand longer than any malleted filling. Malleted gold fillings are continually changing from force of mastication."

Dr. Hinman's method opens up to us great possibilities if properly applied. It will be a true tooth and patient saver.

Dr. A. C. Swift: The danger of cement to tooth pulp used to be a mooted question; we don't hear much of that now.

Dr. Ottolengui answered him by saying that when a pulp dies under a cement filling it will die under any filling. The pulp should have been removed.

Dr. Goldsmith admitted that he was afraid to place cement in any deep cavity without the precaution of a varnish lining.

Because Dr. Perry spoke eloquently about porcelain inlays at the meeting of the First District Society last week he was mildly criticised. He replied that he felt complimented to think that he could be on both sides of any body at the same time. It is necessary in these days to be on both sides if fair-minded.

His contention is that a gold filling, if placed in position with proper undercuts, is stronger than any other.

Some of us older fellows were rather skeptical about removing pulps, but we have come to regard that when a pulp is in any danger it is better to destroy.

Dr. Hinman said he felt gratified to be able to come up here and create a little fuss.

A southern judge was asked what made a man. His answer was judgment. "I don't put this character of work in indiscriminately. It is not universal in application. I did not mean that loose teeth should be used. Doing away with the gold crown was the great incentive for this work.

Some patients will not admit of large gold fillings, but they will submit to inlays.

"In children's teeth I don't fill them any more with cement. I fill them right away with porcelain."

The regular monthly meeting of the New York Institute of Stomatology for November occurred on Friday evening, November 3, instead of the following Tuesday, which was the regular occasion. As that was election day it was deemed best to have the meeting on some other evening.

The subject for the evening was "Orthodontia—Results," by Dr. Lawrence W. Baker of Boston, illustrated profusely with the lantern.

Dr. Baker gave a concise, clean-cut demonstration by models and illustrations of what he had accomplished. Sticking to his

text, he gave the *results* without any description of method employed. His paper was thoroughly enjoyed by all, but there was not much latitude for discussion. It was a paper on which but little discussion could be had as such, though many a text could have been found in it to have quite a dissertation upon. Some of the results attained by Dr. Baker were simply marvelous, especially in the retraction of pronounced protruding upper teeth. Dr. E. A. Bogue and one or two others spoke in a commendatory vein.

THE BOROUGHs.

PRACTICAL HINTS DEPARTMENT.

EDITED BY G. W. JOHNSON, D. D. S.

[This department is for busy readers. We want short articles containing practical ideas—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address G. W. Johnson, THE DENTAL REVIEW, 55 State street, Chicago, Ill.]

Cementing Inlays:—To maintain pressure on inlays in proximal cavities until the cement crystallizes, spring a piece of nursing bottle tubing between the teeth. Allow it to remain until the cement has set.—*Oliver Martin, Ottawa, Canada.*

Backing Teeth:—To back teeth without producing strain on the pins and thus reduce to a minimum the danger of checking the facing, file a notch in each pin close to the backing on the side opposite to which you intend bending them. The notch should be deep, so that the pin will bend easily. I have not had a facing check since adopting this method.—*Oliver Martin, Ottawa, Canada.*

Sensitive Cavities:—For sensitive cavities previous to excavating, I have found an application of the following very effective: Zinc iodide crystals, 1½ grs.; iodide crystals, 2 grs. Make a solution of this in glycerine. Wind a small pellet of cotton on the end of a broach, dip it in the solution and apply it to the decay. For

removing the stain use peroxide of hydrogen.—*E. M. S. Fernandez, Chicago.*

Advice to Patients:—There is only one way in which I can bring people to appreciate the value of cleanliness in the mouth, and that is to tell them that they would not sit down at a table to eat with knives and forks that were one-tenth as dirty as their own teeth are, and still they have their teeth in their mouth all the time. That comes nearest of anything I have found to bringing them to their senses.—*E. A. Royce, Chicago.*

What Was the Matter?—A dentist recently sent a patient, for whom he had inserted a full denture, to me to see if I could ascertain what was the reason her teeth did not work satisfactorily. I found by pressing the lower plate down to its bearings and removing the pressure the plate would be lifted up by the mass of glands and loose integuments, which would rise one-quarter of an inch above the margins of the jaw on the lingual side when the plate was out. This is a very common fault in lower dentures, and in such cases the margins of the plate should be cut away until it is no longer lifted. This was not the only difficulty. The articulation was faulty and this is another common fault. Having ascertained the cause of the trouble it was a simple matter to relieve the patient.—*L. P. Haskell, Chicago.*

Sanitary Bridgework:—That a fixed bridge is never indicated I am not prepared to say, but that the removable bridge has a wider field, with greater possibilities and many advantages, I am thoroughly convinced. We have incomparably a more sanitary denture, greater possibilities of restoration of the lost tissues, whereby more natural and artistic results are obtained. Repairs are made easily and any subsequent repairs upon adjoining teeth are more simplified and less destruction of natural teeth is required for abutments. Another advantage of no small importance is the fact that good, serviceable and artistic bridges may be made with vulcanite at a moderate cost, but the ideal material for this class of work is porcelain.—*F. E. Roach, Chicago.*

Porcelain Bodies:—Owing to the excessive shrinkage of the so-called “low” fusing bodies, the best results will obtain from the use of those designated as “high” fusing, for the reason that a minimum degree of shrinkage combined with a maximum degree of stability of form and color will facilitate and expedite the procedure incident to porcelain bridgework. This advantage may be further increased by the employment of *one grade* of “body” throughout the construction of the work, in preference to using foundation first and then finishing with enamel bodies, because when one grade is used exclusively, if the work is first built up to the desired form and contour, two fusings are usually all that will be required, while in using two grades, three, four and sometimes five fusings may be necessary to produce the same result.—*Hart J. Goslee, Chicago.*

Proper Manipulation of the Toothbrush:—The gums of the upper jaw are to be stroked with the brush only downward, and of the lower jaw upward. If there is tenderness or a tendency to hemorrhage the brush should be handled gently for some days to avoid injuring the tissues, even using a soft brush until the gums have become somewhat toughened. There is an excellent mechanical reason why the particular motion of the brush here recommended is more effective than the crosswise motion. The fluid with which the brush is saturated is pumped through the spaces between the normal teeth at each sweep, thereby dislodging any food debris or bacterial growths. The brush pressure upon the slightly elastic or compressible gum tissue gives a pumping motion to the inter-dental gingival projections, which, I believe, is responsible for the peculiar efficacy of this method.—*Joseph W. Wassall, Chicago.*

Porcelain Bridges:—As a rule, a mouth which needs a bridge needs it because the owner has been careless and uncleanly, and we have no assurance that he will not keep this bad habit, and if he does, a porcelain bridge will be much more cleanly than a gold one, or than his own teeth will be, but as the soft tissues take more kindly to porcelain than to any other material that is held in continual contact with them, we have placed a material here which in itself is not an irritant, and if properly constructed this bridge will be cleaner

than the natural teeth were, and if the patient changes his uncleanly habits there is no material which will respond and become so sweet as porcelain. If there is one thing more than another that has made my porcelain bridgework a success it has been in my unusual care in grinding the set bridge to a proper occlusion. The same high point which on a gold bridge might not weaken it, would be absolutely fatal to a porcelain bridge, and if these high points are discovered by the use of articulating paper and properly relieved, one of the greatest elements of weakness and cause of failure will be eliminated.—*W. H. Taggart, Chicago.*

Proper Food for Children:—Usually the teeth of children forced to live in humble circumstances, eating coarse food, and even this not too plentiful, are not only clean, without the application of a tooth brush, but also, generally speaking, quite free from caries. It may be urged that the position of the teeth in the arch may have had much to do with this condition. Granting this, the fact remains that I have often noted this unusual condition of cleanliness existing in the mouths of poor children where the position of the teeth in the mouth was not normal. The importance of this is that it proves that the best cleaning the teeth get is the cleaning which results from proper mastication of proper food. It has been demonstrated by experimentation that foods of a character readily fermentable, especially if soft, sticky and slowly soluble, quicken and intensify the process of fermentation in the mouth and as a result the destructive process of decay is greatly accelerated. We should recommend foods for children which are coarse in character, not readily fermentable and do not lodge easily in pits and fissures, or upon the proximal surfaces.—*Henry L. Banzhaf, Milwaukee, Wis.*

Cavity Preparation:—Before adjusting the rubber dam clear the opening to the cavity of all overhanging edges, and remove debris and any softened portions of dentine, giving opportunity for frequent use of tepid water to which has been added a good antiseptic or alkaline solution, with syringe, thereby producing comfort and cleanliness while operating. Absolute absence of moisture, however, is always to be desired in final preparation and filling the cavity. One method of cavity preparation will not answer for all cavities. For

small cavities, if the depth is equal to or greater than the diameter, the walls may be left parallel, as the lateral walls will be sufficiently uneven to retain the filling. If the opening is greater than the depth the lateral walls will have to be somewhat larger internally to retain the filling. Proximal cavities should be shaped so as to secure broad, flat foundations at the cervical wall. In compound cavities retention may be gained by use of dove tail, or if the loss of much tooth substance has occurred by the use of screw posts. The finishing of cavity margins forms an important part of cavity preparation. Cut away all thin enamel, beveling the borders by cutting enamel rods in all oblique directions.—*Ralph W. Stewart, Danville, Ill.*

Cleaning Teeth by the Dentist:—The time has come when the dental profession should act, and act wisely, in regard to educating the public on the subject of cleanliness of the oral cavity. Mastication is a first step in a series of processes for the digestion and assimilation of food and unless this process is thoroughly and hygienically done the digestive system and the general health must suffer the consequences. Food can not be well masticated with diseased and aching teeth, nor is the food clean and healthful after being masticated by such teeth covered with decomposed vegetable and animal matter, which not only vitiates the food before it reaches the stomach, but poisons the life giving oxygen before it reaches the lungs. The perfect cleansing of infected gums and teeth is now recognized as one of the most difficult operations that the dentist has to perform, and many a dentist when cleaning a set of teeth covered with tartar has wished that he could take those teeth from the mouth, scrape them, boil them in some antiseptic, polish them on the lathe and place them back in their original sockets, but as this is not feasible, he, through three or four sittings, scrapes and sterilizes almost as well as he could do in a few moments if the teeth were out of the mouth and in his hands.—*F. M. Conkey, Homer, Ill.*

MEMORANDA.

Dr. William B. Daly has been appointed on the Board of Dental Examiners of the District of Columbia.

NEW HAMPSHIRE DENTAL SOCIETY.

The twenty-ninth annual session of the New Hampshire Dental Society will be held at the Pemigewasset House, Plymouth, N. H. (gateway to the White Mountains), May 8 and 9, 1906.

F. F. FISHER, *Secretary*,
Manchester, N. H.

NORTHWESTERN UNIVERSITY DENTAL SCHOOL ALUMNI ASSOCIATION.

Alumni Association of Northwestern University Dental School will hold its annual clinic Tuesday, January 16, 1906, at University building, corner Lake and Dearborn streets, Chicago.

All practitioners are invited to attend.

G. B. MACFARLANE, D. D. S., *Secretary*,
FRED W. PARKER, D. D. S., *President*, 70 State St., Chicago.

THE KANSAS CITY DENTAL JOURNAL.

This is a new dental journal published bi-monthly, and edited by one of the most progressive dentists of the West, Dr. J. P. Root. The first two issues are up-to-date and very entertaining. We have pleasure in extending to Dr. Root a most cordial welcome into the ranks of dental journalism, and we wish him the fullest measure of success. The new editor shall have at least one very devoted reader in Chicago.

ALUMNI CLINIC.

The eleventh annual clinic and reunion of the Alumni Association, Chicago College of Dental Surgery, will be held at the college building, corner of Wood and Harrison streets, Chicago, January 17 and 18, 1906. This will be a notable meeting in every way. In addition to the numerous clinics, papers will be read and discussed, a new feature in this kind of a meeting. A reunion of the different classes will be held and a general good time is assured. A cordial invitation is given to attend this meeting.

RUDOLPH BECK, *President*,
J. C. Y. MOORE, *Secretary*.

SOUTH DAKOTA STATE BOARD OF DENTAL EXAMINERS.

The next meeting of the South Dakota State Board of Dental Examiners will be held at Sioux Falls, S. D., January 16, 1906, beginning at 1:30 p. m. sharp. All applicants for examination must bring diplomas from reputable dental colleges or affidavit of having been engaged in the practice of dentistry for at least three years immediately preceding said examination. Instruments and materials necessary to do all kinds of operative and prosthetic work will be needed at this examination. Vulcanizer and lathe will be furnished by the board. All applications must positively be in the hands of the secretary by January 9th.

G. W. COLLINS, *Secretary*,
Vermillion, S. D.

SPECIAL NOTICE.

The new law governing "the practice of dental surgery and dentistry in the State of Illinois, and to repeal an act therein named," went into force July 1, 1905. Section 6, in part, reads as follows: "And it is hereby provided further, that every person who engages in the practice of dentistry or dental surgery in this state, shall cause his or her license to be registered with the county clerk before beginning the practice of dentistry in said county. *and to be, at all times, displayed in a conspicuous place*, in his or her office wherein he or she shall practice such profession, and shall further, whenever requested, exhibit such license to any of the members of the said board or its authorized agent."

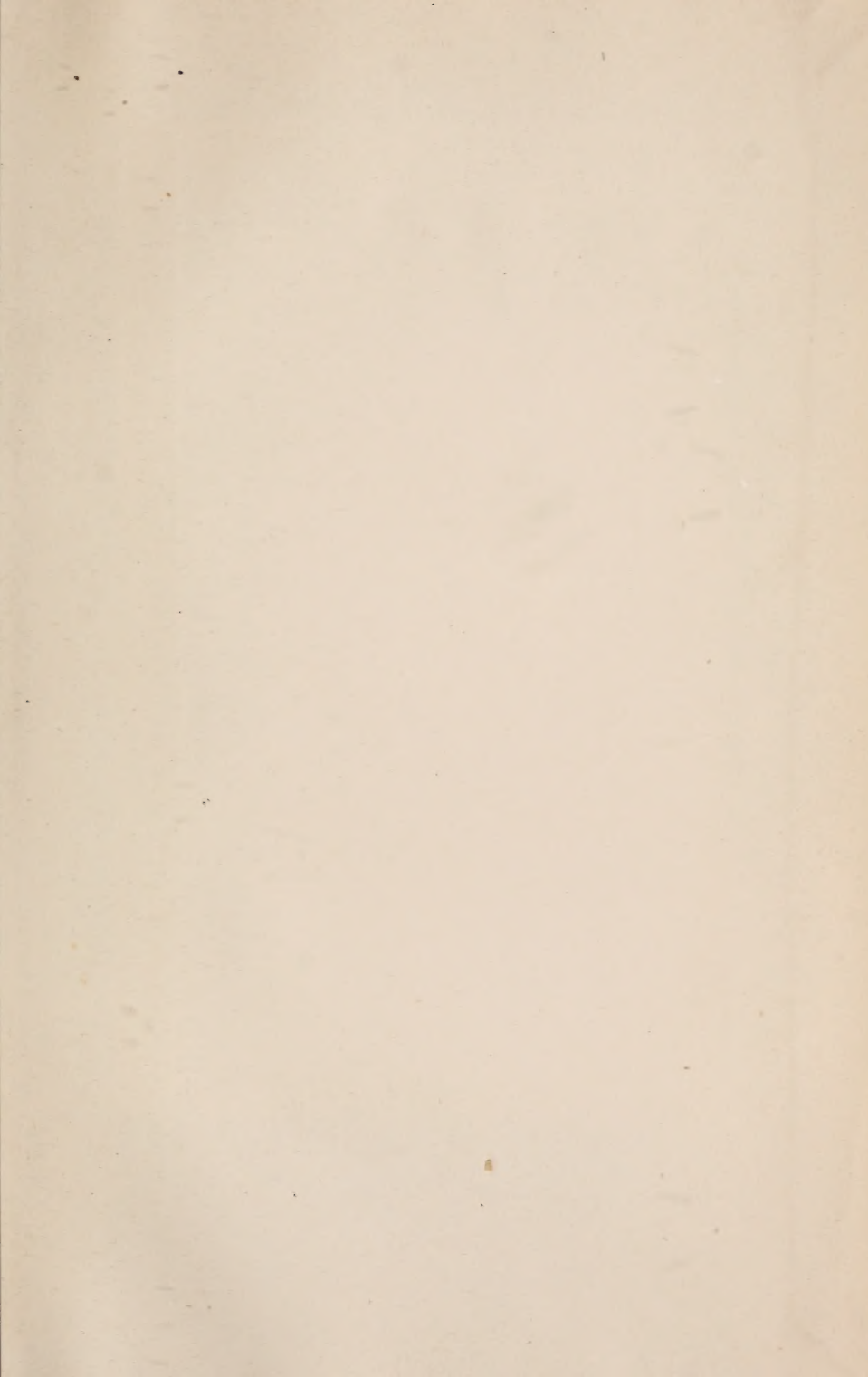
Under the act of 1881, Section 4 reads as follows: "It shall be the duty of every person who is engaged in the practice of dentistry in this State, within six months of the date of the passage of this act, to cause his or her name and residence or place of business to be registered on the books of said board of examiners, who shall keep a book for that purpose; and every person who shall register with said board as a practitioner of dentistry may continue to practice the same as such, without incurring any of the liabilities or penalties provided in this act." There are between seven and eight hundred persons who duly registered their names with the board as practitioners of dentistry within the specified time required by the act of 1881, and but very few out of this number have anything to show that they individually complied with the law, other than what appears on the book of registration now in the hands of the present secretary of the board.

At a special meeting of the Illinois State Board of Dental Examiners held in Springfield, September 7, 1905, a resolution was passed empowering the secretary to have prepared and printed a suitable certificate, which will be properly filled out and signed by the president and secretary, showing date of registration. The certificates are now ready to be sent to all who are entitled to them.

Whoever may chance to see this notice and will make it known by sending in their full name and correct address to the undersigned will in due course of time receive the document by mail. There will be no expenses attached to the distribution of the certificates.

J. G. REID, D. D. S., *Secretary*,
1204 Trude Bldg., Chicago, Ill.





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